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SATURDAY MAY 23 1953

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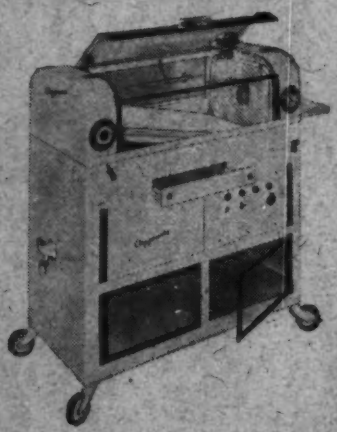

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 23 1953

MEDICINE AND SOCIAL POLICY*

BY

F. A. E. CREW, M.D., F.R.C.P.Ed., F.R.S.

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The name of Sir Charles Hastings is imperishably inscribed in the records that tell of the development of the medical profession and of the ascending social status of the doctor. To him the members of the British Medical Association are deeply indebted. It is but fitting, therefore, that from time to time they should remember him and praise him. To be permitted to act as the channel along which their gratitude may flow is indeed a high honour, and of this I am duly sensible. For this undertaking I possess one qualification that is somewhat rarer than it used to be. It so happens that Sir Charles Hastings was an Englishman who took his medical degree at Edinburgh; so am and so did I, although ninety-four years after the man whose mantle I am momentarily privileged to wear.

Sir Charles Hastings is best remembered for the outcome of his interests in matters political. He was successfully active in the establishment of an improved relationship within the medical profession and between the profession and the society which this served. It is perhaps not inappropriate, therefore, that in this memorial lecture I should attempt to focus your thoughts upon the interconnexion between medicine and politics —two fields of human interest and activity that, in a country such as this, have come to share a common purpose: the achievement of human and social betterment.

This being so, my delight in having in the Rt. Hon. Walter Elliot a chairman with so exceptional a record of high achievement, both in medical science and in statecraft, can readily be appreciated. His presence, for which I am indeed grateful, helps me greatly to make this occasion one when, in the words of Sir John Simon, "statecraft and medical knowledge should sincerely take counsel together for the health of the people."

In the narrow limits of this lecture I propose to speak of medicine as a social science and to restrict myself to a consideration of its uses as an instrument of social policy in this country. That which I have to say, therefore, refers only to the last hundred years or so of this country's history. Medicine could not begin its development as a social science and could not be used by society for the attainment of certain social objectives until many things had come to pass. The population of this country had to grow large and come to live in great aggregates in cities and towns; the dark satanic mills of industry had to be stoked with the health and vigour of the people, to their great detriment; diseases which flourish when great aggregations of people must lead unhealthy lives in most insanitary conditions and against which no defence is available had to threaten all, so that exposure to a common danger would evoke a demand for common action; a great discontent with things as they were had to develop and the demand that they should be changed had to become clamant; there had to evolve a widespread acceptance of the view that much of the prevalent disease was the product of the conditions which great masses of the people endured, that it was preventable and should be prevented, that it was a barrier standing athwart the road of social progress that must be flung down. Moreover, and especially, there had to come into being an acceptance of the view that to prevent disease and to promote health were sound business propositions.

The role of government had to change from what it was when the policy of *laisser faire* prevailed. It had to intervene actively and creatively in the affairs of the community in response to the pressure of public opinion, and one of its major preoccupations had to become the care of the people's health. A machinery that would enable Parliament to safeguard the public health had to be designed and elaborated.

The interests of medicine had to become greatly enlarged; it had to add to its great store of clinical knowledge new knowledge that could be applied to the preservation of the health of the people as a whole. The concepts and methodology of a new disease-preventive, health-promotive medicine had to be elaborated.

Inquiry into Preventable Illness

My story therefore begins with the appointment by Parliament of a Commission of inquiry into the working of the Poor Laws following the passing of the Reform Bill in 1832. This Commission, in its search for evidence from which firm conclusions might be drawn, engaged the services in 1834 of three medical men to inquire into the prevalence and causation of preventable sickness in the cities and towns of Great Britain. This event is surely to be regarded as being of quite extraordinary significance, for it created a completely new situation. It initiated a system in which recommendations rooted in medical knowledge began to shape social policy and to guide legislative action. The information thus gleaned formed the basis of the Commission's *Report on the Sanitary Condition of the Labouring Population of Great Britain* which was issued in 1842. Recommendations contained within this report determined the direction which developments relating to the use by society of medicine as an instrument of social policy were to take during the next half-century. They made it

*Sir Charles Hastings Lecture given at B.M.A. House, London, on May 6.

perfectly clear that so far as the application of medical knowledge to the affairs of the community as a whole was concerned, whilst diagnosis and prognosis largely remained the responsibilities of medicine, there were many diseases of great social importance of which the therapy, to a very large extent, was to become the accepted responsibility of central and local authority, taking the form of adequate social and political action. The pharmacy of this new disease-preventive, health-promotive medicine was to be the council chamber of local authority and the House of Commons, and its major therapeutic instrument the sanitary engineer.

To these recommendations, quite inevitably, political implications were attached, for they involved very heavy expenditure and even necessitated the institution of a new department of government. In 1843 a Royal Commission was appointed to consider these implications, and, in response to the recommendations contained in its report, a Government Bill for the improvement of the public health was introduced in the House of Commons in 1845, and 1848 saw the passage of the Public Health Act, which provided for a central General Board of Health with local boards to abate nuisances and to deal locally with matters relating to the people's health. Here again an event of great significance occurred. To this Board, after considerable opposition had been overcome, a medical member was appointed, thus ensuring that at the highest level medical advice should be available for the shaping of policy.

In 1854 this Board was reconstituted, and to it an advisory council, which included a number of medical men, was attached. In 1858 this General Board of Health came to its end, but its salaried medical officer and its medical duties were transferred to the Privy Council. Then in 1871 the medical interests of the Privy Council were transferred to a new central board, the Local Government Board, which had a complete medical department. Finally, in 1919, there came into being the Ministry of Health, essentially as we now know it.

Influence of Medicine upon Legislation

This procession from the General Board of Health to the Ministry of Health depicts the very great and steadily progressive expansion of the attention given by Government to problems relating to the preservation and augmentation of the people's health, and it also reveals the steady growth of the influence of enlarging medicine upon legislation.

The extent of this increasing care of the people's health by Government and the consequent expansion of legislation based upon recommendations rooted in medical knowledge can perhaps best be appreciated by reference to the list of Acts of Parliament that relate directly to measures designed to protect the population against the hazards of disease. In 1837, when Queen Victoria ascended the throne, the Statute Book contained but one—the well-intentioned but futile Act for providing quarantine. But between 1848 and 1948 some fifty Acts of major importance, of ever-widening scope, and relating directly to matters affecting the public health, were added. Of these the most recent, the most impressive, and those which most clearly illustrate the growing recognition of the interdependency of health and welfare and the expanding collaboration of politics and medicine in the general field of human ecology, are the National Health Service Act of 1946, the Children's Act of 1946, and the National Assistance Act of 1948.

These Acts indicate overtly that the Government accepts full responsibility for the provision of a wide variety of means whereby the people's health can be safeguarded and augmented. The Minister must now equip himself with the means of knowing what the public needs in political terms and with the means of satisfying these needs in administrative ways. No longer does governmental action wait on agitation.

During the last half of the nineteenth century medical knowledge and skill were harnessed to the task of sweeping the physical environment clean of the various living and non-living agencies which were shown to be causally related to disease. The expanding medical services of central and local authority dealt not directly with the human population itself but with the conditions and circumstances of the external physical environment in which the community lived. These medical services did for the individual and for the small community those things which they themselves could not do, protecting the individual and the community against dangers that with the passing of the great epidemics came no longer to be generally recognized.

Health-promotive Services

Then, in the first half of the present century, as concepts of disease causation widened, there evolved a completely new kind of medical activity based upon the recognition that the population was divisible into categories, biological and social, and that each of these presented different medical problems which demanded different methods of disease prevention and health promotion. To serve their various needs there came into being special medical services designed to care for such categories as the mother and child, the school-child, the industrial worker, the pensionable, and the variously handicapped; and new branches of medicine—for example, paediatrics and industrial medicine—made their appearance and developed. The importance of this development lies in the fact that the concepts underlying it and the methodology that was elaborated in connexion with it pertained to what was tantamount to an entirely new kind of medicine, group medicine as contrasted with the medicine of the individual, disease-preventive and health-promotive medicine, and applied to the affairs not of individuals but of communities and the categories within them.

Possibly the greatest value of this later development was to be found in the education of the people in the ways of healthy living, in the changing group patterns of behaviour, in securing the co-operation of great numbers of citizens in endeavours directed toward health promotion, and in bringing to their awareness the existence and scope of the medical services of central and local authority and the philosophy of health-promotive medicine.

The education of the general public concerning the nature and causes of health, and concerning also its personal and social value, is undoubtedly a prerequisite to all successful endeavour by governmental agencies and by the medical profession towards the augmentation of the public health. Only when people ardently desire health can the benefits that medicine has to offer be enjoyed to the best advantage; only then can Government translate this desire into project and scheme. During the nineteenth century on the continent of Europe it was made abundantly clear that a Government, no matter how benevolent in intent, could not impose a regimen of health upon a disinterested people. Thus it was that this development of what may be called the category health services and their indirect education of the general public made the further development of the health-promotive services generally both necessary and inevitable as the appetite of the people for health continued to grow.

Changing Pattern of Morbidity and Mortality

The effects of this employment of medicine as an instrument of social policy are best revealed in movements of such rates as the crude death rate, the infant mortality rate, the survival rate, and in the shift in the life expectancy. They are revealed also in the changing pattern of morbidity and mortality and the changing age structure of the population. It is not suggested that the intervention of medicine in social affairs alone was responsible for these changes; for other and very powerful agencies were at work. There had been occurring during the course of the century under

review a gradual but definite uprising of the general standard of living, in the level of education, of nutrition, of housing; of the conditions of work, and of social security. It is difficult, if not impossible, to disentangle the separate effects of any one of these factors. Nevertheless, it is essentially reasonable to postulate that in the production of the changes that occurred medical intervention played a by no means unimportant part. In saying this I am but repeating what Sir Charles Newman in this Sir Charles Hastings Lecture of the year 1928 stated so much more elegantly: "Health," he said, "is Everyman's duty. It must be every man's Quest ere it can become a national Conquest. . . . The vastly improved health of the people in our generation has no doubt been partly due to the fuller application of medicine and sanitation, but still more to the forces of *education, sociology,* and *biology*."

In 1948 the crude death rate was but half of what it had been a hundred years before and the infant mortality rate only a quarter. To the life expectancy of the individual, which in 1848 was about 40 years, 25 and more years had been added. Of the total mortality at all ages at the beginning of the century almost half was recorded as being due to the infectious diseases; at the end of the century these diseases were responsible for only about one-sixth of all deaths. In 1948, of the diseases formerly exceedingly prevalent, some, such as cholera and typhus, were no longer to be found in the list of the causal agencies of death in this country. Typhoid and smallpox had become rarities and diphtheria had lost its importance. Scarlet fever and rheumatic fever were no longer to be feared and the venereal diseases were rapidly passing under control. The pneumonias, though still common, had become far less lethal than formerly, for the case fatality rate had fallen almost to nothingness even amongst the old. The mortality among children under 10 years of age had so greatly diminished that it was only one-sixth of what it had been in 1900. These are indeed triumphs in the achievement of which medicine can rightly claim to have played no little part.

In this successful rebellion against untimely death the weapons that medicine used were of two kinds—those that belong to the armamentarium of the new preventive or health-promotive medicine and those that are the instruments of the older and far more evolved clinical or curative medicine. The former kind took the form of measures for the control of the causal agency of the disease and for the increase of the resistance of the individual to the attack of the disease-evoking agent—for example, sanitation, the encouragement of hygienic personal and public habits in the community, vaccination, and immunization. The weapons of curative medicine consisted for the most part of specific measures taken to modify the action of the causal agency or to mitigate its effects—for example, the introduction of the serum treatment for pneumonia in the 1920s was directly responsible for a steep fall in the death rate from this disease. A similarly dramatic fall later followed the introduction of the sulphonamide drugs, and yet another was directly due to the introduction of penicillin. The introduction of insulin brought continued life to thousands of diabetics. Improvements in surgical, anaesthetic, blood transfusion, and radiotherapy techniques all made their contributions.

Principal Causes of Mortality

But as great as the powers of preventive and curative medicine had become, disease had not been conquered. Great victories had been won, but the war was by no means ended. Diseases that formerly claimed but a lowly place in the list of the causes of disability and death came to occupy a position of dreadful prominence. First among the great killers to-day stand diseases of the cardiovascular system, responsible for rather more than one-third of the total deaths at all ages. Close on their heels come cancer, violence, and tuberculosis. High among the causes of morbidity are peptic ulcer and nervous disorders and, among the elderly, diabetes.

There are relatively far more old people in the population now than there were a century ago. The diseases of the cardiovascular system and malignancy occur far more commonly in the old than in the young; it is to be expected, therefore, that as the age-structure of a population changes as ours has changed their incidence will rise. But this does not explain the sharply rising incidence of cancer of certain sites, of the lungs for example. The great increase in the habit of cigarette-smoking and the increasing vitiation of the atmosphere are under suspicion as contributory factors, but as yet the evidence is not completely firm. An increase in the number of deaths from violence was to be expected as the population grew older and became increasingly urbanized, as mechanization became introduced to augment the power of labour, and as the speed of multiplying transport continually mounted. To-day, in the 5–14 age group, violence, taking the form of an accident, is the major cause of death in the male.

Tuberculosis continues to hold its high place among the enemies of achievement because its causation is multifactorial. Though there is a micro-organism which is the prime causal agent, genetic and socio-economic factors are also involved. The therapy that is demanded, therefore, must consist in a combination of medical and social intervention, and as things are at the moment the power of medical therapy, though great, is to a considerable extent made impotent because of the inability on the part of society immediately to provide those environmental conditions which would segregate the infective sufferer and protect the rest of the community from the hazards of infection.

Into the causation of gastric ulcer possibly genetic and certainly social factors enter. The mental strains of modern life, the widespread unhappiness among such as are not sustained by simple and firmly held religious faiths or their equivalent, the complexity of human interrelationships and the uncongenial and even unhealthy nature of many occupations, the carelessness of many concerning personal habits, have all been blamed for the rising prevalence of this complaint.

Mental illness has a higher incidence in the older age groups than in the younger. Thus its incidence in the over-70 age group is more than twice that in the population as a whole. The figures showing the number of admissions into mental hospitals can be misleading, since not uncommonly they include readmissions. Moreover, it is probable that a far higher proportion of the mentally ill in the population are admitted to hospital than formerly. Not so long ago lunatics were segregated in asylums; now the mentally ill are cared for in mental hospitals. Nowadays psychiatry offers several kinds of therapy, and in many forms of mental illness there is a hope of cure. It is not possible to make an accurate comparison between the incidence of mental illness now and a hundred years ago, but it is by no means unlikely that an actual increase has occurred. Be this as it may, the load constituted by the chronically and hopelessly mentally ill is exceedingly heavy and is an impediment to social advancement.

In very general terms it can therefore be concluded that the conquest of infectious diseases, of the diseases that formerly decimated the young, and of the diseases of privation is fairly complete, and that, as a consequence of this, certain diseases formerly relatively infrequent in their incidence have come to assume a considerable prominence. The diseases of plenty have come to be more common and the chronic diseases of the mature and senescent—genetic, metabolic, degenerative, and malignant—have now become so prevalent as to command the attention not only of the medical profession but of society as a whole. Furthermore, and again in very general terms, it can be concluded that the diseases which have passed or are passing rapidly under control are those in which the causal agencies have their existence in the external *physical* world of the community, whilst the diseases that have now come to figure so prominently among the causes of chronic disability and death are those in the causation of which a variety of factors operate—a few

genetic and some which relate to personal habits, but in the main those which exist in the external *social* world of the community.

Social Adjustment

The diseases that have passed under control are, for the most part, the diseases of biological man. Man shares his external physical world with a multitude of other living things with which, if he is to flourish, he must establish an equilibrium. In this physical environment there are the micro-organisms that cause disease; these must either be eliminated or, alternatively, between them and the human subject there must become established by natural or artificial means a harmonious relationship. As a consequence of advancing knowledge in such fields as sanitary science, parasitology, and entomology, and especially bacteriology, such elimination has become possible and harmony between biological man and many of the pathogenic micro-organisms in his external physical world can be established.

Man elaborated that aggregate form of living which we know as a human society in order, presumably, to facilitate his dominion over a hostile environment and to make easier the satisfaction of certain fundamental human needs. He is a gregarious animal, and it may be assumed that he found by experience that living in aggregates made the production of food and shelter more certain, gave greater protection, satisfied his yearnings for companionship, and secured the continuance of his kind. The early forms of human society certainly seem to have conferred much advantage upon their individual members. Their kinship relationships and their rituals did much to shift the load of emotional difficulty from the individual on to the broader back of the group as a whole. It would seem that man's elaboration of this social organization from the primitive to the modern has produced an external social world that at many points is violently in disharmony with human needs, and also that the speed of this societal evolution has exceeded man's ability to adjust.

To great numbers of purposeless, bewildered, and perplexed individuals in our society who feel that they have a right to be healthy, since adjustment is beyond their unaided ability, the conditions that exist are intolerable, and in their attempts to escape from the uncongenial there would seem for them to be an easy and respectable route, that of vague, ill-defined, and symbolic illness. Such illness, in no sense a display of malingering, is a common excuse for masochistic sloth, for those who delight in mortification for its own sake, and for the inefficient. Much sickness of this kind is to be regarded as dramatized discontent born of disharmony, as a malaise of maladjustment, and the profession of medicine, therefore, being forced by circumstances to restrict its activities to dealing with the symptoms rather than with the cause, is largely employed in perpetuating the conditions that are primarily responsible for such sickness. Indeed, with the world as it now is nothing could be more calamitous than to rob the people of this kind of sickness, for as things are there appears to be no escape from perplexity and uncongeniality for thousands amongst us other than through the narrow neck of the bottle of medicine. To a large extent one of the major social functions of medicine has thus unfortunately become the provision of comfort for the inefficient and of support for those who, because of their own inadequacies, cannot cope with circumstance.

The nature and causes of health are as yet but imperfectly comprehended. Certainly health is more than biological efficiency, much more than the smooth working of a multitude of interdependent component parts of a machine; it is partly a thing of the spirit of man, a by-product of the exercise of human aspiration and of the satisfaction of attempting or of achieving the worth-while in life. It is a state of harmony, within oneself and between oneself and the external world.

Attitude towards Health

The different income groups within the population and different regions within the country are to be distinguished by significant differences in respect of the incidence of a variety of illnesses. Many of these are undoubtedly true reflections of differences in the conditions and circumstances of their environments and occupations. Though the benefits of medical care have latterly been made available to all, not all of those to whom they are available are in a position to profit therefrom. The different social categories are not so much to be distinguished nowadays by differences of income as they were in former times, as by differences in their modes of spending the money that is earned. It can be spent in ways that are conducive to the maintenance and augmentation of health or otherwise, and much depends upon the attitude towards health and to the desirability of securing it that prevails in the different groups. And even though the desire for healthiness were equal throughout society the chances of securing it are by no means equally distributed. Thousands of the population are still imprisoned in the hideous squalor of the legacy that was left to us by the nineteenth century. Others are bound by the shackles of tradition, ignorance, and superstition. Such imprisonment, such bondage, are not compatible with the maintenance of health, and under such circumstances there is very little that purely medical therapy can do.

Society for its continuance requires that a vast variety of tasks shall be undertaken. Some kinds take the form of strenuous physical labour, others are sedentary; some are in the open air, others in the vitiated atmosphere of office and factory; some are creative and emotionally and intellectually satisfying, others are dull routine drudgery. Very many of these occupational categories have their own peculiar health hazards, some being positively dangerous. In general terms the amount of minor illness occurring among those undertaking a particular kind of work is an index not only of the danger to health but also of the uncongeniality of the work that is demanded. It is small among those who are doing work that is satisfying to them and which is regarded as important by others; it is considerable among those who are called upon to perform work from which they derive no contentment. Here again purely medical therapy is largely impotent and only social therapy can hope to eradicate the causes of such sickness.

The great disparity between the numbers now marrying each year and the number of houses that are available to them is undoubtedly an indirect cause of much discomfort and distress that often leads to actual illness, both mental and physical. In the establishment of that micro-environment which is the home, if this is to be health-promoting in respect of its general conditions and atmosphere, the family grouping can claim an exceptional importance. Evidence that has been accumulated shows beyond all doubt that the interrelationships between the individuals constituting the family play a most important part in determining the state of the mental health of the component individuals. Yet the kind of society that we have developed so far has imperilled the very continued existence of the family group and has made the achievement of a harmonious interrelationship among its members difficult of achievement.

An Urgent Need

Though these developments undoubtedly have their repercussions in the medical field, medicine itself has no therapy which can be applied to the resolution of the problems they create. It would seem, indeed, that the great and urgent need of the day is that the encouragement thus far given by society to the medical scientist shall be given with the same readiness and in the same magnitude to other social scientists also from whose studies it can be expected that there may emerge knowledge that could be transformed into the power to repair the present disease-evoking qualities of society and its institutions.

This is of importance also because of the complexity and social importance of the problem of the progressive increase of the proportion of the aged within the population that has resulted very largely indeed from the success of medicine in giving to society the power of controlling the disease-

evoking agencies resident in the external physical world. The proportion of the aged has risen because the birth rate has fallen and because the survival rate, especially amongst the younger age groups, has risen. Though the net reproduction rate of the population has fallen, of those that are born fewer now die in infancy, childhood, and early maturity, and so live on to die in late maturity and old age. Since the reproduction rate has fallen to half of what it was a century ago and since the survival rate has risen so dramatically, it follows that there are now relatively far fewer young in the population than there used to be and relatively more old, and so the mean age of the population has steadily risen, and indeed is still rising. At present the life expectancy among those aged 65 and over is not substantially greater than it was a hundred years ago. But should the ardent quest for the power to control the cardiovascular and malignant diseases be successful, then the life expectancy of the individual would at once leap to become far greater than it now is.

Since in great numbers of instances death at present amongst the old is not the gentle end of a long and progressive waning but is a last phase in the progress of some particular disease, it follows that in increasing measure the patients of the physician will be those in the older age groups of the population and that the commonest of the most serious diseases with which he must attempt to deal will be the malignant and the cardiovascular diseases, chronic in their course and disabling in their effects.

That branch of medicine which is now becoming known as geriatrics will assume an importance both in medical education and in practice equal to that of paediatrics in the early decades of the present century. But sickness in old age differs from sickness in youth or maturity in that, since in a large number of instances the old either live alone or inconveniently with relatives or others, the attention, domestic and nursing, that the patient requires is not readily available. The social aspects of such disease are no less important than are the purely medical, and therefore social as well as medical therapy is demanded.

A Growing Economic Burden

As things are in our society the economic burden constituted by those of pensionable age and over within the population is already heavy and must grow heavier still if the present trends continue. It is society's will, in accordance with the prevailing social ethic, that life shall be preserved and prolonged; the ethic of medicine binds the physician to the same obligation. In the medical sciences the quest for the knowledge that will give power to control the degenerative and malignant diseases eagerly proceeds; yet in the social structure as we know it there is no place for the old, and much illness among them would seem to derive from a sense of sudden extrusion from the community. Disease of this kind is the reaction of the total personality to the uncongenial circumstances to which the individual is suddenly exposed. Feeling unwanted, many amongst the old do not exercise their skills and to their own hurt futilely rebel against the conditions that imprison them.

Since it is not improbable that the life expectancy of the individual will become further, and perhaps greatly, extended, it behoves society to ensure that the problems thus created do not lead to crisis and catastrophe. The life span being thus extended and healthiness being assured to the senescent, the relation between the chronological and the physiological age of the individual will need to be reviewed. Manifestly the school-leaving age and the age on retirement in a population in which the life expectancy is 75 years might well be much higher than in one with a life expectancy of 45 years. But there will be much need for knowledge on which the education of the middle-aged in the art of growing old can be based, for guidance clinics for the senescent, for the development of a system whereby the process of withdrawal from society and from work as the power of adjustment and adaptation wanes is as gradual as the process of entrance into society by the infant. Medicine as a social science must be heavily involved in these matters, but its role must remain a subordinate one to that of the statesman, whose policies are shaped by advancing knowledge in all those scientific disciplines which deal, directly or indirectly, with those features of a human society which affect the public health.

Problems of Colonization

Medical intervention of the same kind has created even more acute and serious problems in other and relatively undeveloped countries. During the course of the period of the phase of colonization in which we as a people indulged, we introduced into many parts of the world the medicine that is part of our own culture, proclaimedly using it with benevolent intent to improve the lot of the indigenous peoples whose cultures differed greatly from our own. We inserted nineteenth- and twentieth-century Western European scientific medicine into the cultures of peoples who, according to our own standards, were still living in the equivalent of our own Middle Ages. By doing so we have largely helped to destroy those cultures and have created problems of far greater complexity than those which we attempted to solve.

In India, for example, the population has been increasing at the rate of four and a half millions every year, and that this is largely the result of the introduction during the period of British rule of our standards of sanitation and medical care is beyond doubt. India is at present quite incapable of feeding from her own resources her immense and rapidly growing population, and so, quite inevitably, much poverty and even more misery are the lot of millions. The major task facing the Indian statesman is that of finding solutions to the social and economic problems thus largely created by medical intervention.

In Africa the introduction of modern European medicine for the benevolent purposes of saving life and of eradicating disease from the indigenous populations has been largely and directly responsible for the magnification of a cluster of problems that relate to the interrelationship of the different ethnic groups. In South Africa the policy which the medical services have there pursued seemingly has been in discord with the policies of the presently predominant political party.

In many parts of the Empire it has been shown that the effects of medical intervention far outpace those of the other services which are directed towards social amelioration, and that in so doing create problems that threaten to bring all such betterment to an end. The eradication of many and prevalent diseases responsible for much death, disability, and inefficiency—malaria, venereal diseases, yellow fever, and the like—has become a relatively simple matter, but their elimination can result in a complete disruption of the prevailing economic system so that famine can threaten to become the regulator of population growth unless wise statecraft intervenes.

Perhaps the lesson that is to be learnt is that medicine is but one of many activities that are directed to human and social amelioration; that medicine can bring under control the environmental factors causing the major diseases of a native people far more speedily than the other services can create the conditions that are necessary if those thus saved and made healthy are to flourish, and that possibly in all projects for social amelioration of this kind what is needed is a time-table of intervention so that the medical services are timeously introduced as part of a complete and comprehensive project which does not neglect the educational, economic, and other aspects of the problem.

Repercussions

Thus, both in this country and overseas, medical action has given rise to repercussions that take the form of grave and serious social problems, problems unlike those which medicine has so far solved, in that to them certain ethical values are attached. With the growing disparity between

the supporting and the supported categories within a population, and with the increasing disparity between the number of mouths to be fed and the available food resources of the world, the problem that the *bouche inutile* creates gains in importance. In this country within the National Health Service it is already being found that the existing facilities cannot cope with newly discovered and enlarging needs. The authorities concerned are being forced to give serious consideration to the construction of a calculus of priorities. Great, therefore, becomes the need for the provision of the means whereby greater and more detailed knowledge concerning the variety and the needs of the public for those services can be secured. The changing age-structure and the changing pattern of morbidity are prominent among the factors that are creating the demand for the expansion of medical and hospital services at a time when the financial resources of the nation are strained.

It is to be remembered that in their beginning the medical services were encouraged because it was thought that such medical intervention would prove itself to be a sound business proposition. It would certainly seem that the reasons for the encouragement of medical research and of the practice of preventive and of curative medicine have changed, though not completely, since then. It would be difficult to maintain that the medical care of the old, permanently disabled by chronic illness, or of the idiot and imbecile beyond all human aid is economically desirable. Such matters are not to be considered in economic terms, for moral principles are involved. They do not create difficulties within the medical profession, for this is governed by an explicitly stated code; but they do constitute problems of profound difficulty and complexity for society as a whole. There is to be discerned a growing interest in such matters as the sterilization of the unfit and euthanasia, which can be regarded as an indication that the gravity of the problem is becoming recognized and that the search for a possible solution has begun. I refer to this matter only to attract your attention to the possibility that in the future the social ethic may come to be in conflict with the ethic that at the moment prevails within the profession of medicine.

Changing Needs

The medical ethic in its origin and development was associated with the development of the profession of medicine as a body concerned with the diseases of individuals. It regulates the relationship of physician and patient, often as intimate a relationship as that of the confessional. Like the Church, the medical profession would seem to claim that it is concerned with matters outside the province of the State, that its obligations are to the individuals that seek its aid, and that it is not in any way concerned with the social consequences of its benevolence. Concerning many matters of interest and importance to society—contraception, sterilization, euthanasia, divorce, for example—there are medical aspects. But concerning them there would seem to be no purely medical opinion, but merely the conflicting views of medical men and women whose attitude towards such matters as these is moulded by their sincerely held religious faiths, so that the opinions expressed derive their strength therefrom.

Yet it is with such matters as these that those medical men and women who serve in the field of population medicine, of medicine as applied to the affairs of the population as a whole, are becoming increasingly involved. They are required to present to the departments of government or to committees of local authority a purely medical opinion concerning them and to relate this to the action that is being considered. Such expert opinion commands the serious attention of those whose responsibility it is to consider and weigh all relevant knowledge and opinion and translate this into scheme and project.

It is not improbable that public opinion in this country concerning the value of the individual life, beginning at the moment of conception, will change. Indeed, there is plentiful evidence that both among the general public and within the medical profession it is already changing fast. The social ethic, like the law that sustains it, is mutable. It may come to be regarded as ethical by the great majority of the general public to terminate the life that from birth is imprisoned in a body without a brain or to bring to a peaceful ending a life that flickers fitfully in a body that is tortured by agony beyond endurance. Should this happen, will the ethic of medicine remain inviolate or will it become modified as the social ethic changes?

If not, then it is not improbable that in the future the ethic of the medicine of the individual and that of the medicine that is applied to the affairs of society as a whole may come to differ, to make even greater the divergence in respect of their philosophies that even now distinguishes them. The ethic of the former belongs to an age that is swiftly passing and is becoming inappropriate to the circumstances of a world in which the major quest is for social amelioration rather than for personal continuance.

The major obligation of medicine in increasing measure will be towards society, and medicine will continue to be one of the most potent instruments that society will use for the achievement of its aims. It will be for medicine, along with the other social sciences, continually to examine and to define the changing and enlarging needs of socialized man, in respect of health conservation and augmentation, and for politics to design and to provide the means whereby society can be so shaped that these needs are satisfied.

But all such endeavour must remain barren unless the citizen, knowing its value, desires health and, seeking it, eagerly and intelligently makes use, in the conduct of his private and public life, of the knowledge and of the facilities thus made available.

TREATMENT OF POLYCYTHAEMIA RUBRA VERA*

BY

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The cause of polycythaemia rubra vera remains unknown; indeed, the very nature of the disease is still debatable, although perhaps a majority would favour its inclusion with leukaemia in the group of unexplained, and apparently purposeless, mesenchymal proliferations. Our ignorance limits treatment to the empirical and the symptomatic. In general the therapeutic aim has been to maintain a normal blood count. It is therefore pertinent to inquire whether its achievement relieves the patient's symptoms or prolongs his survival, and in what manner the disease terminates.

Associated Diseases in Polycythaemia Vera

There are symptoms, such as a sense of fullness in the head, vertigo, flushing, dizziness, and pruritus, which can be attributed without question to the changes in the blood and which disappear when the erythrocyte count falls to normal. They need to be separated from those of vascular degeneration, arterial hypertension, gout, peptic ulcer, renal calculus, and other common companions of polycythaemia vera. Videbaek (1950) has shown that the disease, as treated in the past, shortens the expectation of life; in his patients the mean survival from the time of diagnosis was six years for men and nine for women (Fig. 1). Whether maintenance of a normal erythrocyte count prolongs

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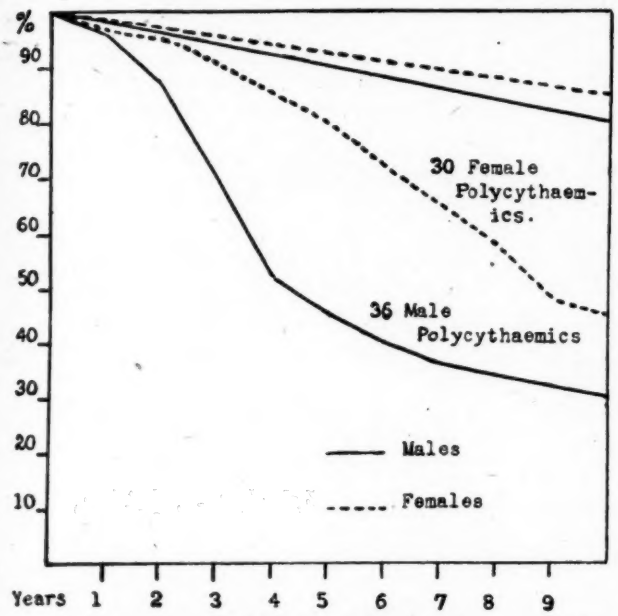

FIG. 1.—Percentage of patients with polycythaemia vera surviving at the end of each year compared with the survival for the general population of the same age (Videbaek, 1950).

survival is unknown, because no series of untreated cases is available and because satisfactory control has been exceptional. Videbaek's figures will provide a useful yardstick for measuring the efficacy of newer methods of treatment, but they show that a long period of observation is required before any conclusions are justifiable.

The causes of death in polycythaemic patients are relevant to this question of survival. It is a disease of middle and later life, and it is not surprising to find it accompanied by the degenerative states common in these epochs. Table I

TABLE I.—*Associated Conditions in 36 Patients with Polycythaemia Vera*

Arterial thrombosis:	
Cerebral	4
Mesenteric	3
Coronary	2
Limb	1
Thrombophlebitis	2
Peripheral arterial disease	2
Hypertension	8
Duodenal ulcer	2
Gastric ulcer	3
Intestinal haemorrhage	2
Renal calculus	2
Pyelonephritis	1
Diabetes mellitus	3
Gout	1
Various	3

shows the frequency of complicating disease in the present series of 36 patients, and is representative of the larger experience of other authors. Vascular disease occupies the first position; but peptic ulceration, renal calculus, and gout are all more common than in patients of like age without polycythaemia.

The causes of death reveal the importance of these associations (Table II). It is rare for death to be immediately attributable to the progress of the polycythaemic process; perhaps the examples of leukaemia and the even less common instances of secondary myelosclerosis fall into this category. More than half the deaths are due to vascular accidents, most frequently thrombotic; calculous pyelonephritis accounts for as many as 18% in one series (Videbaek, 1950), and leukaemia for 6%, while causes apparently unrelated to polycythaemia are responsible for the remainder.

TABLE II.—*Causes of Death in Polycythaemia Vera (from Lawrence, 1949; Videbaek, 1950; Stroebel, Hall, and Pease, 1951)*

	Not Treated with P^{32}		Treated with P^{32}		S.E. of Difference
	No.	%	No.	%	
Vascular accidents	56	52	17	39·5	8·87
Leukaemia	6	5·6	10	23·3	6·8
Other causes	46	42·4	16	37·2	—
	108		43		

Aims of Treatment

There is no evidence that vascular degeneration is more common in the polycythaemic patient than in others; it is logical, therefore, to attribute the frequency of thrombosis to the increased viscosity of the blood, and reasonable to hope that maintenance of a normal count will diminish, or at any rate defer, the incidence of such catastrophes. Renal calculus depends on the increased excretion of urates, a product of the bone marrow's overactivity, rather than on the elevated erythrocyte count; its control by measures which discourage this activity might be anticipated.

Restraint of the hyperplastic bone marrow seems, therefore, to be a rational treatment. It would control the erythrocyte count and relieve the "true" polycythaemic symptoms. The restoration of normal levels, both for erythrocytes and for platelets, might be expected to diminish the risk of thrombosis. Uric acid excretion, the increase in which is probably a function of bone-marrow hyperplasia, should fall to normal, lessening the danger of stone and renal infection. It must be stressed, however, that, although these effects can logically be anticipated, there is as yet no incontrovertible proof that, excepting the relief of true polycythaemic symptoms, they do in fact occur.

Methods of Treatment

From what has been said it will be clear that treatment of patients with this disease is often a matter of complexity: arterial or venous thrombosis, dyspepsia, gout, or renal calculus may dominate the picture, and the management of these disorders against a background of polycythaemia may call for many difficult decisions. This communication, however, concerns itself only with methods of controlling the polycythaemic process and not with these problems of general management.

Until recent years the two therapeutic measures in common use were venesection and the haemolytic agent phenylhydrazine, either alone or in combination. By these means many patients have been kept free from symptoms for long periods, but both methods have practical and theoretical disadvantages. Repeated bleedings and the haemolysis occasioned by phenylhydrazine are bone-marrow stimulants, and, although the erythrocyte count may be kept within bounds, there is no like effect on the leucocytes or the platelets. The dosage of phenylhydrazine is difficult to control and its action is sometimes unexpectedly abrupt. More important is the iron deficiency which results from continued venesection: in many patients treated in this way chlorotic polycythaemia (Rosenthal and Bassen, 1938) appears, the haemoglobin reading falling below normal although the erythrocyte count remains high. An impasse is reached in which the increased viscosity of the blood and its attendant perils demand further bleeding, which will inevitably reduce the haemoglobin level enough to cause anaemic symptoms.

During the past decade, chemical and radiotherapeutic methods of treatment have been devised which meet our theoretical requirements better than the two already discussed, in that they aim to abolish the bone-marrow hyperplasia. Nitrogen mustard is representative of the first group and will certainly procure remission in many patients. Its action is short-lived, and relapse usually occurs within six months (Spurr, Smith, Block, and Jacobson, 1950); moreover, its side-effects are often unwelcome. The folic acid antagonists have been used, but results are indifferent (Bell and Davis, 1950). Radiotherapy is undoubtedly more satisfactory. It is best applied by total body irradiation (Richardson and Robbins, 1948), and the results are excellent. Only three patients of the present series were treated

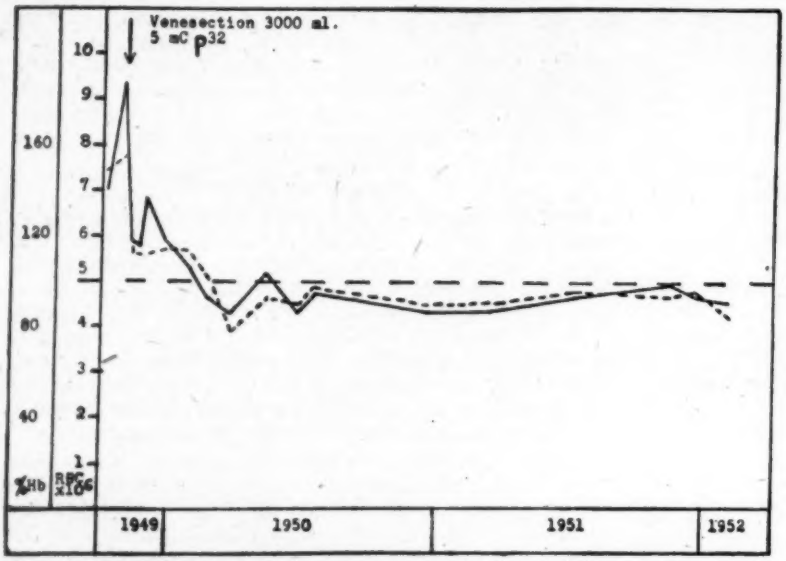

FIG. 2.—Polycythaemia vera in a woman aged 50. Satisfactory control with venesection and radioactive phosphorus.

in this manner, and good remission was obtained in all; one of them remains well after more than three years. The method is, however, cumbersome, and treatment may take several weeks.

Radioactive Phosphorus

A more convenient means is by the administration of the radioactive isotope of phosphorus, P^{32}. This was first employed in 1940 by Lawrence, and the results in several large series have been published in the United States (Erf, 1946; Reinhard, Moore, Bierbaum, and Moore, 1946; Lawrence, 1949; Stroebel, Hall, and Pease, 1951; Wiseman, Rohn, Bouroncle, and Myers, 1951). The following remarks are based largely on these reports.

P^{32} is prepared from red phosphorus by one of several methods; it decays at a constant rate, emitting only beta rays, and has a half-life of 14.3 days. Its radioactivity is measured in millicuries, one millicurie being that amount of radioactivity produced by the disintegration of 37,000,000 atoms per second. When administered, P^{32} is incorporated in the nucleoproteins, particularly of rapidly dividing cells, and finds its way mainly to the bone marrow, liver, spleen, lymph nodes, bones, and teeth. Given intravenously 5–25% is excreted, chiefly in the urine; by mouth the loss is 15–50%, largely in the stool. About 75% of an oral dose is absorbed. In the average adult, 1 mC of P^{32} emits on the first day radioactivity equivalent to about 0.6 roentgen unit given by total body irradiation, or 12 roentgens during the time required for complete decay. In healthy monkeys its effect is shown by a reduction in the number of circulating leucocytes, with a lesser fall in the erythrocyte count; the lethal dose is about ten times that judged to be the equivalent of the human therapeutic dose (Scott and Lawrence, 1941).

The results of the American workers are all in close accord: in 80% of patients satisfactory remission, lasting for at least a year, is obtained; in about 20% the result is poor or treatment has to be abandoned because of a precipitous fall in platelet or leucocyte count. These last haematological complications are rare, and fatal in less than 1%. Remission does not, of course, imply more than restoration of a normal blood picture and freedom from true polycythaemic symptoms; insufficient time has elapsed to know whether patients receiving P^{32} live longer than those treated by other methods.

There is little doubt that acute myeloblastic leukaemia occurs more commonly after the use of P^{32}. The incidence of chronic myeloid leukaemia remains the same, and may perhaps be regarded as one normal termination of the polycythaemic process. The figures in Table II include patients dying of both forms. Even so, the increase is unlikely to be due to chance; if only the acute variety is included the increase is undoubtedly significant. In one paper reports of 453 patients treated with P^{32} were reviewed, of whom only 40 (8.8%) had died; yet of these deaths, 12 (30%) had been due to acute myeloblastic leukaemia (Wiseman *et al.*, 1951).

The present series is so small compared with those from America that detailed analysis would be impertinent. Of 35 patients seen during the past five years, only 20 were treated with P^{32}; of these, 16 have been observed for more than a year. In 13 patients (80%) satisfactory remission lasting a year or longer followed treatment; one of the treated patients has died from calculous pyelonephritis.

The technique employed has been developed with Mr. I. G. Williams, Director of the Radiotherapeutic Department at St. Bartholomew's Hospital, and closely follows those described by other authors. The initial erythrocyte count is reduced to 6,000,000 per c.mm. and the haematocrit reading to 55% by daily venesections, not exceeding 1,000 ml. in volume; patients have been bled of as much as 6,000 ml. in a week without ill effect. After venesection P^{32} is given intravenously in doses varying from 3 to 5 mC; the dose is judged by the initial erythrocyte, leucocyte, and platelet counts and by the size of the patient. Patients are seen at intervals of six weeks, and no further P^{32} is given for at least two months; further venesection is avoided. Few patients have required a second dose. A leucocyte count below 5,000 per c.mm. or a platelet count below 150,000 per c.mm. has been taken to contraindicate this form of treatment (Figs. 2 and 3).

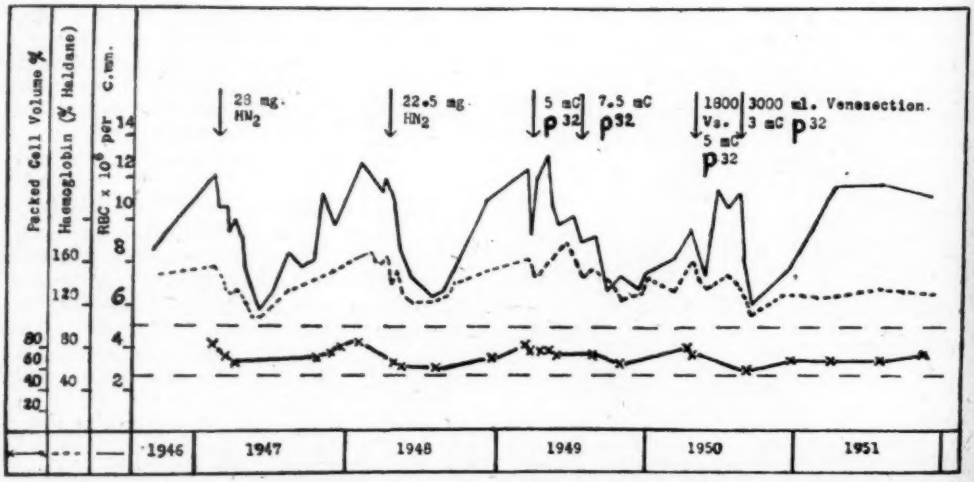

FIG. 3.—Polycythaemia vera in a man aged 36. Unsatisfactory control with nitrogen mustard, followed by venesection and radioactive phosphorus. Further treatment with radioactive phosphorus was withheld because the platelet count fell to 90,000 per c.mm.

Conclusion

Our experience, although diminutive, has confirmed the published opinions that radioactive phosphorus offers the most convenient means of controlling the haemopoietic exuberance of polycythaemia rubra vera. In 80% of patients the blood count is restored to normal for at least a year, and the symptoms immediately attributable to its previous perversion are relieved; the remainder are either resistant to this form of treatment or show leucopenia or thrombocytopenia sufficient to make it dangerous.

Acute myeloblastic leukaemia is a more common termination in those given P^{32} than in those not so treated. The size of this risk remains to be assessed, and it will be some years before we can be certain that the mean survival is increased or the incidence of vascular and other complications lessened by treatment with radioactive phosphorus.

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OBSERVATIONS ON PROGNOSIS IN HYPERTENSION

BY

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Lumbo-dorsal sympathectomy for hypertension is no longer a novelty, although in this country experience of this method of treatment is perhaps only now maturing. Reports of success from this operation have been criticized by Platt and Stanbury (1950) on the grounds that the prospects of many of the patients chosen for operation may well have been favourable in any case. Such criticism, indeed, cannot easily be refuted, since it exposes an unfortunate gap in our knowledge.

Follow-up studies such as those of Janeway (1913), Blackford, Bowers, and Baker (1930), and Bechgaard (1946) have helped to give us a fair conception of the overall prognosis in hypertensive disease, yet probably most of us would agree that, though we could recognize the malignant type of case and perhaps the obviously benign case, we are seldom in a position to predict with any confidence the future of a hypertensive patient, at least at the first examination. So long as we lack this facility unnecessary operations may be inflicted upon hypertensive patients, while in others the decision to operate may well be left too late. It seemed that this situation could be remedied only by acquiring a wider experience of short-term prognosis in hypertension, and this was the object of the present study.

The observations were begun in 1946 at a clinic for hypertensive patients. In addition to the selection of cases for sympathectomy it was proposed to follow the progress of every patient by full examination at regular intervals; the hope being that when eventually each individual course or fate came to be related to the original clinical findings these would establish the guiding principles by which even at the first examination a hypertensive patient's future might be predicted.

Patients were not accepted for this study unless their diastolic pressure was 100 mm. Hg. or above (the systolic pressure has been largely ignored), or if their age exceeded 60; later, with interest becoming centred on the younger group, the age limit was lowered to 50. The period of observation ranged between two-and-a-half and five years and the patients were examined at intervals of twelve months, six months, and in a few cases three months, according to the severity of their disease. The clinical examination and investigation were strictly standardized, and a progress sheet incorporating the main features in graph form was maintained for each patient.

Since blood pressures were often found to differ considerably in the two arms, the average of a number of readings in both arms was recorded, the final figures being taken after 20 minutes' undisturbed rest. The blood pressure was also taken with the patient standing, and in the leg as well at the first examination, lest coarctation of the aorta be missed. Retinal changes were classified in the conventional five grades as initiated by Wagener and Keith (1939): grade O, normal; grade I, spastic retinal arteries with or without variations in calibre; grade II, compression of veins at arteriovenous crossings; grade III, the presence of exudate or haemorrhages; and grade IV, papilloedema. The investigations included intravenous pyelography; 6 ft. (1.8 m.) chest *x*-ray film for record of heart size in terms of cardiothoracic ratio; 12-lead electrocardiography; chemical, microscopical, and culture examination of urine; urea-clearance test; modified urine-concentration test; and standard blood biochemistry.

The review is based on the study of 151 hypertensive patients (93 women, 58 men) who fulfilled the necessary criteria. These were first examined during the period October, 1946, to June, 1949; they were treated conservatively, and their fate or condition was known at the end of 1951.

Mortality

During the period of observation 51 patients (34%) died as a consequence of hypertension. The death rate for men alone was 44%: the male mortality was higher in each of the main causes of death, with the exception of cerebral vascular accidents, in which proportionately the sexes were equally represented. Even this slight difference may not be fortuitous, since Frant and Groen (1950) showed an actual preponderance of women dying from strokes.

The age at which the 51 patients died and the individual causes of death are shown in Fig. 1. As would be expected, most of the deaths occurring before the age of 45 were due to uraemia, whilst most deaths from other causes occurred in the sixth decade. The height of the diastolic pressure has obviously an important bearing upon mortality, particularly in the case of hypertensive men (see Table).

Percentage Mortality in Relation to Diastolic Blood Pressure at First Examination

	Diastolic Pressure					
	100–119 mm. Hg		120–129 mm. Hg		130+ mm. Hg	
	No.	Deaths	No.	Deaths	No.	Deaths
Men ..	18	1 (5·5%)	16	7 (43·8%)	24	19 (79·2%)
Women ..	39	4 (10·3%)	17	5 (29·4%)	37	15 (40·5%)

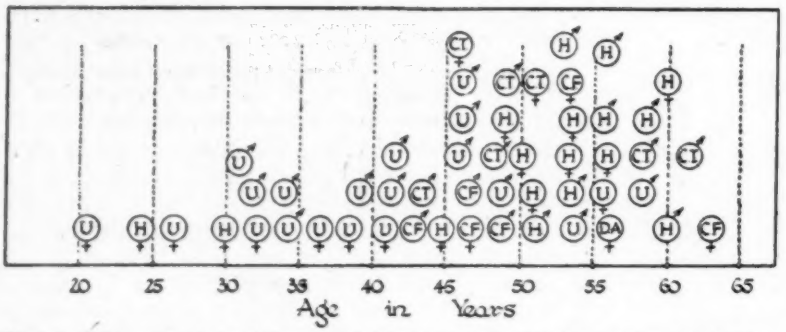

FIG. 1.—Age at death of 51 patients dying from hypertension. Cause of death: U=uraemia; H=cerebral haemorrhage; C.T.=coronary thrombosis; C.F.=congestive heart failure; D.A.=dissecting aneurysm.

For example, at the end of this comparatively short period of observation, only 5 men were alive out of 24 who had a diastolic pressure of 130 mm. Hg at their first examination.

Analysis of Clinical Findings

There were 100 survivors, and in Fig. 2 these have been divided into two groups according to the diastolic pressure at their first examination; in 73 it was below 130 mm. Hg and in 27 it was 130 mm. Hg or over. This chart shows the percentage incidence of certain of the main clinical features when these patients were first examined. While percentages of relatively small groups are obviously open

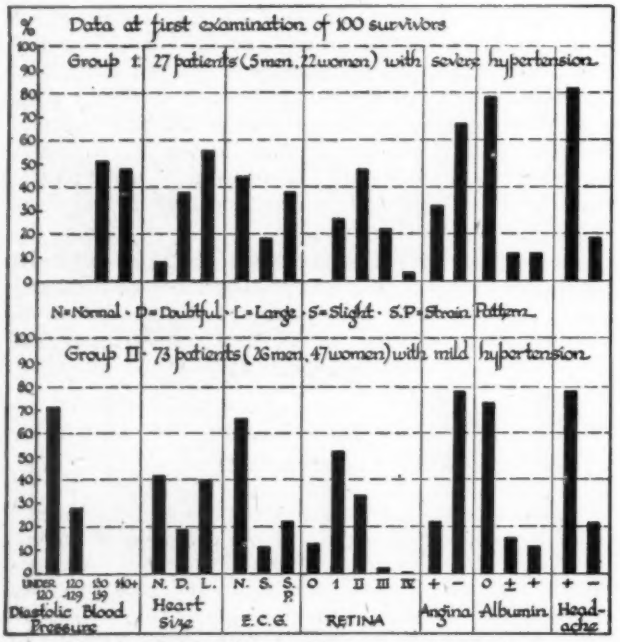
Data at first examination of 100 survivors
Group I: 27 patients (5 men, 22 women) with severe hypertension
N=Normal · D=Doubtful · L=Large · S=Slight · S.P=Strain Pattern
Group II: 73 patients (26 men, 47 women) with mild hypertension
Diastolic Blood Pressure
Heart Size
E.C.G.
RETINA
Angina
Albumin
Headache

FIG. 2.—Data at first examination of 100 survivors.

to criticism, as a method of comparison they seem unavoidable. Since the object of this form of presentation is essentially to show trends, it was thought that on this basis they could be accepted.

It will be seen that in the severe group more hearts are enlarged, more electrocardiograms are abnormal, more retinae show advanced changes, and there is a greater incidence of angina. On the other hand, albuminuria is no more frequent and headache occurred equally in the two groups.

Searching next for some indication of why one patient is more liable to a cerebral vascular accident than another, the presenting clinical features of 30 patients who later had strokes of one sort or another are compared with those of a group of 17 severely hypertensive patients who survived without such disasters (Fig. 3). By selecting severe cases for comparison it was considered that any differences found would have increased significance. Despite the fact that in the former group blood pressures were not uniformly severe, there seems little doubt that these patients for the most part had the more advanced disease: not only were there more enlarged hearts and abnormal electrocardiograms among the patients who developed cerebral vascular accidents, but the incidence of retinal changes of grades III and IV and of true albuminuria was also notably higher.

A similar clinical analysis of the patients destined later to die from uraemia is presented in Fig. 4. It will be seen that little more than half of these patients had diastolic pressures in the severe range when first examined, and that enlarged hearts and abnormal electrocardiograms were the exception. Hypertensive headache was almost universal, but the outstanding feature of this group is the remarkable frequency of advanced retinal changes and of true albuminuria. No less than 90% of the cases had retinal changes graded as III or IV, and 75% had albuminuria in excess of a trace.

If now Figs. 2, 3, and 4 are considered together some interesting trends can be recognized. For example, the incidence of severe retinal changes (grades III and IV)

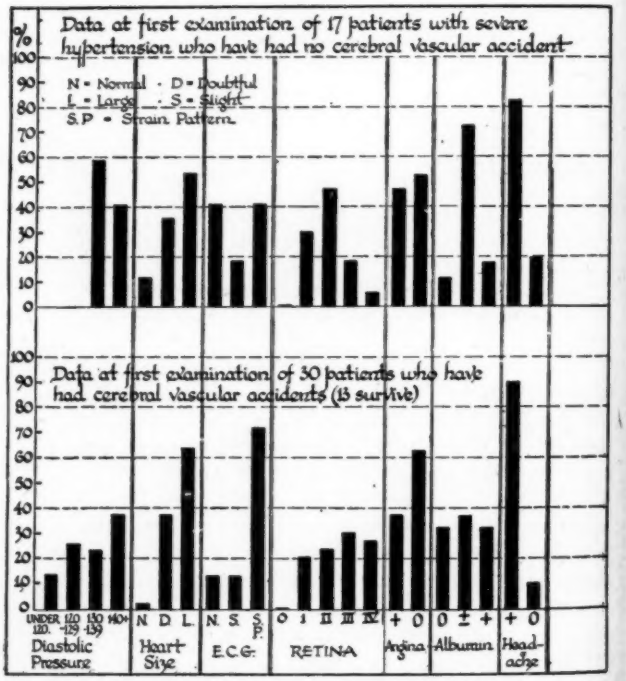
Data at first examination of 17 patients with severe hypertension who have had no cerebral vascular accident
N = Normal · D = Doubtful
L = Large · S = Slight
S.P = Strain Pattern
Data at first examination of 30 patients who have had cerebral vascular accidents (13 survive)
Diastolic Pressure
Heart Size
E.C.G.
RETINA
Angina
Albumin
Headache

FIG. 3.—Comparison, at first examination, of 17 patients with severe hypertension who have had no cerebral vascular accident with 30 patients (13 survivors) who have had cerebral vascular accidents.

and of true albuminuria when related to the four groups of patients (Fig. 5) shows a remarkably progressive pattern. The parallel behaviour of these distinct features with its suggestion of a single pathological process should also be noted.

Enlarged hearts and abnormal electrocardiograms show a similarly progressive incidence in three of the groups of patients. These changes, however, were not a feature of the fourth group who died from uraemia; this is not surprising, for many were young and their disease was probably of relatively short duration. While from these figures it may be inferred that a high diastolic pressure increases the chances of developing an enlarged heart or an abnormal

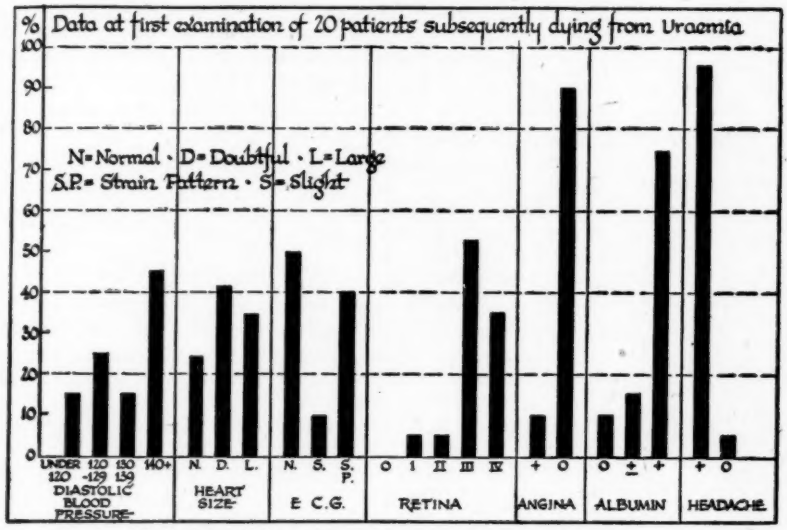

FIG. 4.—Clinical analysis of 20 patients subsequently dying from uraemia.

electrocardiogram, other factors are clearly involved, for it will be seen that these changes were encountered most often of all in a group (30 patients who developed cerebral vascular accidents) in which severe blood pressures were not consistently found.

Thus far, at least one conclusion seems inescapable: that regardless of the height of the blood pressure the stage which the hypertensive disease has reached may best be judged on the presence or absence of these four clinical features—namely, advanced retinal changes, albuminuria in excess of a trace, cardiac enlargement, and abnormality of the electrocardiogram.

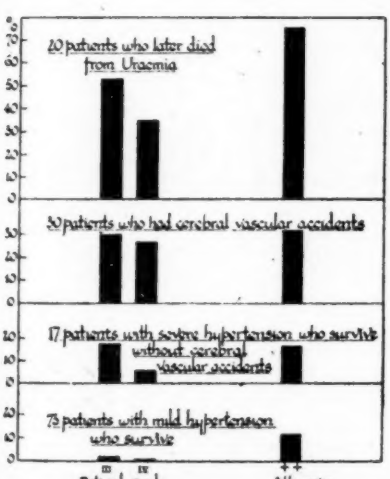
20 patients who later died from Uraemia
30 patients who had cerebral vascular accidents
17 patients with severe hypertension who survive without cerebral vascular accidents
73 patients with mild hypertension who survive
III IV
Retinal grade
++
Albumin

FIG. 5.—Incidence of advanced retinal changes and of albuminuria in four groups of hypertensive patients.

Secondary Hypertension

A primary cause was possibly responsible for the hypertension in 21% of the 151 cases in this study (and 25 others submitted to sympathectomy). In all but three cases the primary cause was renal; the exceptions being respectively cases of phaeochromocytoma, Cushing's syndrome, and periarteritis nodosa. A primary cause was recognized in 32% of the fatal cases, but, rather surprisingly, of the 20 patients dying from uraemia only 7 at most were thought to have primary renal disease.

Familial Incidence

Inevitably any estimate of the familial incidence of vascular renal disease which relies upon information supplied by the patients themselves is likely to be inaccurate. But, making every allowance for this, the figure of 35% obtained in this group seems surprisingly low. A familial tendency, however, has not appeared to influence prognosis, for among the fatal cases the incidence was no higher, and it was perhaps rather surprising though comforting to find that, so far as the 15 deaths from strokes were concerned, history had repeated itself in only three instances.

Obesity and Prognosis

Obesity and hypertension have proved a favourable combination, for 50% of the 100 survivors were overweight, compared with 14% of the patients who later succumbed. Yet apparent objective improvement may follow substantial weight reduction. It was found, for example, that 11 patients out of 18 showed an average fall in diastolic pressure of 17 mm. Hg after reducing their weight by 21 to 56 lb. (9.5 to 25.4 kg.); in seven cases the heart appeared to decrease in size as well. Though at first sight a paradox, the probable explanation is as Wood (1950) suggests, that obese patients are not as severely hypertensive as they appear; certainly the benign course pursued by these patients despite high diastolic pressures would support this view. The exaggerated sphygmomanometer reading obtained in a fat arm seems likely also to account for the apparent fall in blood pressure after weight loss; and even reduction in size of the cardiac silhouette does not necessarily indicate objective improvement, since loss of abdominal fat with lowering of the diaphragm will of course alter the position and contour of the heart.

Progress of Surviving Patients

At the end of the observation period three-quarters of the 100 survivors were still leading unrestricted lives, but in at least 60% there was evidence that the disease had advanced. This was shown mainly by enlargement of the heart, deterioration of the electrocardiogram, or advance in retinal grading; blood pressures showed little tendency to rise. Albuminuria to the extent of a trace or light cloud made its appearance in the urine of more than half of the cases with severe hypertension, and here also there was a tendency for the specific gravity of the urine to become fixed. Broadly speaking, however, the severe cases behaved little differently from the milder ones, with the exception that cerebral vascular accidents occurred six times more often among the former.

Discussion

Hypertensive disease must be regarded as inevitably progressive, but the rate of progress, and therefore the prospects, of each patient are infinitely varied. Prognosis is essentially concerned with estimating the rate of advance. A full study of each hypertensive patient along the lines adopted in this investigation will reveal the extent of the damage already caused by the hypertension, and if this is then related to the patient's sex, age, and build, and above all to the height of his diastolic blood pressure, it should generally be possible, even when first seen, to assign a case to one of two categories: benign hypertension or "accelerated" hypertension.

Benign or Slowly Progressive Hypertensive Disease

The patients in this group, fortunately the largest in the hypertensive community, are likely for the most part to survive at least to 65. The most common cause of death is from congestive failure (Goldring and Chasis, 1944); uraemia is extremely rare except as a complication of heart failure, and cerebral vascular accidents are not to be expected until a reasonably advanced age. It is true that on occasion a patient who initially appears to qualify for this group will unexpectedly develop signs of an accelerated process, though this seems to be uncommon: within the period of this study not more than two patients from the 100 survivors appeared to alter course in this manner.

Recognition of this form of hypertensive disease presents little difficulty, for most of the patients are women with

diastolic blood pressures consistently nearer 100 mm. Hg than 120 mm. Hg; but, since many of them are obese, some allowance for this must be made when higher pressures than these are recorded. Retinal changes observed in these cases never exceed grade II. The urine rarely contains more than a trace of albumin, and loss of concentrating power is the only indication of impaired renal function. The heart enlarges progressively, but the electrocardiogram as a rule becomes abnormal only when the enlargement is considerable (Leishman, 1951).

"Accelerated" Hypertensive Disease

At the opposite end of the scale the most rapid form of the disease, which usually terminates in uraemia below the age of 45, is also easy to identify. Unfortunately, however, such cases are often encountered only in the pre-terminal phase, when symptoms such as failure of vision compel attention for the first time. The age, the advanced character of the retinal changes—that is, grade III or IV—and the presence of a dense cloud of albumin distinguish this type of hypertensive case from all others. Most of these patients are men, and they are rarely, if ever, obese. Diastolic blood pressures tend to be high, of the order of 130 to 150 mm. Hg, though this is not invariable. At the first examination renal function may have failed to the point that urea retention is already established, but so rapid is the disease process that the heart, on the other hand, may have enlarged little and may still be maintaining good function. It seems a rather profitless endeavour to attempt to decide whether a case of this character is primarily due to renal disease or not. Indeed, the only practical question is whether or not the disease is too advanced for sympathectomy.

Malignant hypertension is still regarded in some quarters as a disease of its own unrelated to other forms of hypertensive disease. In the light of clinical experience, however, this seems improbable, for there is no sudden transition between the clinical picture conventionally described as "malignant" hypertension and that of other cases of longer survival which run an abnormal and unfavourable course. It seems more likely that the difference is not in the nature of the vascular disease but rather in its speed of development, and the one clinical type therefore merges gradually with the other. In its most rapid form the kidneys are quickly overwhelmed and death is from uraemia, but if the tempo is slower the kidneys survive and time allows other forms of disaster to overtake the patient. However, the most convincing evidence in favour of a single disease process comes from experience of sympathectomy for hypertension, for there is no doubt that even the malignant form of the disease can on occasion be arrested by sympathectomy.

One result of this five-year study is to suggest that, given the opportunity of examining hypertensive patients before they reach the age of 50, it ought to be possible to identify not only the malignant type of case but also this other type which, while not rapidly fatal, is nevertheless unlikely to survive, at least without incapacity, much beyond the age of 60. The commonest interrupting factor in the less rapid though unfavourable case is of course a cerebral vascular accident, and by the age of 60, or scarcely beyond, about one-fifth of the patients in this study had experienced some type of stroke. Others developed premature congestive failure either as a consequence of coronary thrombosis or independently of this. The three deaths from uraemia at a relatively late stage were in each case associated with cardiac failure.

While, of course, we are here on less familiar ground, there seems to be some chance of foreseeing the possibility of these disasters. In the first place, as a generalization it seems certain that, regardless of all other features of his case, a male of average build with diastolic blood pressure of the order of 130 mm. Hg or above has an unpleasantly slender chance of surviving unscathed to the age of 60. Coronary thrombosis can scarcely be foreseen, except that the risk of this is obviously greater in a patient already anginal, but the premature development of congestive failure may perhaps be anticipated if the heart has early become enlarged or, on the other hand, if the strain pattern has appeared in the electrocardiogram before enlargement of the heart is obvious (Leishman, 1951).

The fate of a hypertensive patient seems to be largely determined by vascular changes which are still imperfectly understood. Oedema of the optic nerve, exudation and haemorrhage into the retina, and leakage of albumin into the urine are recognized as sinister developments; all of these suggest loss of vascular integrity, yet experience of sympathectomy has shown that these changes are reversible. It is not unreasonable, therefore, to assume the development of a biochemical lesion, possibly from anoxia, or perhaps owing to some other metabolic poison. The observations here reported have suggested that the speed with which these vascular changes develop is principally governed by the height of the diastolic pressure. The critical level, indeed, appears to be in the neighbourhood of 130 mm. Hg (as recorded in an average-sized arm), and with pressures at or above this figure the process is likely to accelerate.

While the particular liability of hypertensive patients to cerebral vascular accidents is presumably a further expression of this vascular vulnerability, it is not of course suggested that a stroke is likely to occur only when the retina shows advanced changes and the urine contains much albumin. Examination of the patients who subsequently sufferred cerebral vascular accidents at a premature age has, however, generally indicated that all systems were reacting unfavourably. The impression has often been gained that changes which in a benign case might take 10 to 15 years to develop have here appeared in half that time, and for this reason the designation "accelerated" hypertension seems appropriate for this form of the disease.

Conclusions

The character or severity of a hypertensive patient's symptoms, other of course than those which point to cardiac or renal failure, give little clue to his subsequent fate. Headache, for example, has occurred as often in mild as in severe cases. Again, it might well have been expected that the transient cerebral attack ascribed to "angiospasm" would prove to be a curtain-raiser for the subsequent full-length drama of a stroke; but this has not been the case, and the incidence of such cerebral episodes was no higher among patients who subsequently had strokes than in those who did not. Since in addition neither a family history of hypertension nor the existence of a renal basis for the hypertension appears to influence prognosis unduly, assessment of a hypertensive patient must rest fundamentally upon objective findings.

Early recognition of the accelerated form of hypertensive disease is particularly desirable, since it is in this type of case that sympathectomy has most to offer, and operation performed in time may completely transform its character. Appropriate cases, however, will not be selected for sympathectomy unless the practice is adopted of submitting every hypertensive patient under the age of 50 to a systematic assessment with the object of establishing how far the disease has already progressed, for only by relating this to the age of the patient can it be decided whether or not the speed of advance has been excessive.

Summary

The selection of appropriate hypertensive cases for lumbodorsal sympathectomy presents difficulties which can be resolved only by a wider knowledge of prognosis in this disease.

In the hope of acquiring this knowledge 151 hypertensive patients below the age of 60 have been studied by regular examination over periods ranging from two-and-a-half to five years.

During the period of observation 51 patients died as a result of hypertension, giving a mortality rate of 34%. The mortality for men alone was 44%. The height of the diastolic blood pressure had an important influence on the mortality rate.

A familial tendency has not appeared to prejudice a hypertensive patient's prospects, and the existence of a primary cause for the hypertension had only a slight adverse influence.

It is probable that the combination of obesity with hypertension appears favourable only on account of the misleading sphygmomanometer reading.

The progress or fate of these patients has been related to the main clinical features which presented at their first examination.

It is suggested that the stage reached by the disease can best be judged on the presence or absence of four features—namely, advanced retinal changes, albuminuria in excess of a trace, cardiac enlargement, and abnormality of the electrocardiogram.

If the present stage of the disease is recognized the rate of its advance can be estimated, and thus to a large extent the prognosis may be foreshadowed.

Even at the first examination it should generally be possible to classify the type of hypertensive disease as "benign" or "accelerated."

Sympathectomy is principally justified in patients with the accelerated form of hypertensive disease.

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PULMONARY EMPHYSEMA TREATED BY PNEUMOPERITONEUM

BY

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Emphysema is a rather vague appellation given to patients suffering from dyspnoea, cough, and in some cases congestive cardiac failure. The term usually means the chronic hypertrophic vesicular emphysema with the "large lungs" described by Sir William Jenner.

A severe disability results from progressive dyspnoea, and all clinicians recognize the common clinical features of a life made wretched and too often hopeless. The breathless existence of the patient is prolonged to some extent by the control by antibiotics of episodes of acute pulmonary inflammation.

Emphysema occurs more commonly in men than in women, and this incidence seems pronounced enough to raise the suspicion of an occupational factor. There is no conclusive evidence on this point, but the incidence does not seem to be higher in occupations where "blowing" is a feature. The effect of hard manual work is doubtful, but the importance of attacks of bronchitis and the effect of a chronic cough is recognized. Asthma is also recognized as an important predisposing factor, and bronchospasm in childhood may be followed by years of good health to be succeeded by the development of emphysema.

The essential pathological feature is a loss of elasticity in the lungs, which are voluminous but not truly distended. The lungs are pale, and the blood is supposedly pressed out of the capillaries. The alveolar walls are atrophied, bullae develop, and the intrapleural pressure is raised. Expiration is thus impaired, being largely a passive process produced by recoil of the elastic tissues of the lung. The changes result in an inability to ventilate the lungs, and the oxygen saturation of the arterial blood falls to 85%. The carbon dioxide in the blood and alveoli rises and the patient is unable to compensate by increasing the pulmonary ventilation. The inspired air tends to be drawn into avascular and dilated alveoli which form a large pathological dead space.

The clinical picture in the established case is one of misery. Dyspnoea is caused by the increased blood carbon dioxide and cyanosis is largely central. Polycythaemia is fairly common and clubbing of the fingers is sometimes present even in uncomplicated cases. The movement of the chest is poor and expansion often less than 1 in. (2.5 cm.); the antero-posterior diameter is widened and the shape sometimes "barrel"; the accessory muscles of respiration are fully employed; and hyperresonance obscures the hepatic and cardiac dullness. Air entry is poor, rhonchi and rales are widespread, and bronchospasm is often present.

Points in Diagnosis

Christie (1944) and others have stressed the importance of associated conditions. The diagnosis is not to be based on isolated symptoms and signs: it is established by the development of insidious dyspnoea on exertion which is not due to bronchospasm or left ventricular failure, together with some of the characteristic signs, and chronic bronchitis or asthma. The long duration and seasonal aggravation of the dyspnoea distinguishes it from cardiac dyspnoea, and there are no nocturnal attacks unless asthma is present. *X*-ray features are not diagnostic, but several abnormalities are common. Whitfield *et al.* (1951) found that the most constant radiological abnormalities were depression and flattening of the diaphragm, with poor respiratory excursion, the relative brilliance of the lung bases, and the translucency and area of the retrocardiac and anterocardiac windows. The ribs are widely separated and transversely placed, and there is rotation and elongation of the heart shadow associated with prominent pulmonary arteries.

In many cases of emphysema associated with severe dyspnoea it is difficult to determine and assess the influence of myocardial failure. McMichael and Sharpey-Schafer (1944) showed that the cardiac output is normal or increased in cases of heart failure secondary to lung disease. Cardiac catheterization in cases of emphysema reveals that the right ventricular systolic pressures are normal but become raised with the development of cardiac failure. The pressure returns towards normal with recovery from failure, proving that the pulmonary hypertension cannot result solely from fixed anatomical changes in the vascular bed of the lungs (Mounsey *et al.*, 1952).

The clinical details of the cases under review are given later, but the electrocardiograms do not seem to help in diagnosing or in selecting cases. Seven cases had normal electrocardiograms, one case had cor pulmonale, and one had right axis deviation, and no difference was apparent

in the electrocardiograms taken before and after the institution of treatment by pneumoperitoneum. The criteria for the diagnosis of chronic cor pulmonale were taken from Katz (1946).

In 40 consecutive cases of emphysema admitted to the County Hospital, Whiston, the electrocardiograms were interpreted as follows: normal, 20; cor pulmonale, 2; right axis deviation, 6; left axis deviation, 6; myocardial insufficiency, 6.

The above brief review of the aetiology and diagnostic features of emphysema provides a basis for consideration of methods of treatment. A loss of lung elasticity is the basic disability, and this seems to be progressive and uninfluenced by treatment.

The correction of abnormalities in the nose and sinuses, postural drainage, and the control of infection by antibiotics are helpful. A cough can be reduced sometimes by sedatives; ephedrine relieves bronchospasm; and oxygen is a successful measure of therapy, especially in the presence of congestive failure, when the usual treatment is given. In spite of these measures numbers of severe cases are improved but little, and dyspnoea renders life so intolerable that any means of giving relief is to be welcomed.

Treatment

The treatment of pulmonary emphysema by pneumoperitoneum was introduced by Reich (1924) and used by Monaldi (1937) in the treatment of asthma. Sisti (1936), Piaggio-Blanco and Sayagues (1938), and Rubin and Gass (1948) have also reported on the use of pneumoperitoneum in asthma. New interest was aroused in the use of pneumoperitoneum in a preliminary report by Furman and Callaway (1950), who studied its effect on seven emphysematous patients, five of whom received impressive symptomatic relief.

The rationale of pneumoperitoneum is to increase the intra-abdominal pressure enough to cause elevation of the diaphragm during expiration and yet not to impede its contraction during inspiration. Increased excursion of the diaphragm is thus obtained, with consequent improvement in pulmonary ventilation.

Other better-known measures in use have a similar rationale—namely, breathing exercises and the use of an abdominal binder, advocated by Christie (1934), Gordon (1934), and Alexander and Kountz (1934); but with neither of these methods does the elevation of the diaphragm compare with that obtained in pneumoperitoneum.

Nine cases of severe pulmonary emphysema were selected for treatment by pneumoperitoneum and have been studied for varying periods.

The patients were selected because of their severe disability. As a preliminary, active bronchial infection was treated with antibiotics to which the organisms in the sputum were sensitive, after which the following control procedures were carried out: (*a*) the diaphragmatic excursion in full inspiration and expiration was measured radiologically; (*b*) the vital capacity was measured on a "British" Benedict spirometer, the readings being taken at three seconds and also with no time limit: the three-second reading was used by Furman and Callaway (1950) because, given enough time, an emphysematous subject can record quite a high vital capacity by prolonged muscular effort; (*c*) haemoglobin and red cell count; and (*d*) electrocardiogram.

It was also intended to record the intrapleural pressures before and after treatment, but experience of this procedure on the first two patients, who were already orthopnoeic, was so alarming that it was abandoned. The above investigations were repeated at various intervals during treatment.

The pneumoperitoneum was induced with a Kjer-Petersen needle, the point of entry being roughly midway between the umbilicus and the anterior superior iliac spine, in either the right or left side: 400 c.cm. of air was given initially, and the volume was increased gradually twice a week until 800 to 1,000 c.cm. could be given without discomfort. Thereafter, refills were given at weekly or two-weekly intervals. When the pneumoperitoneum was established the final intra-abdominal pressure usually lay between 9 and 12 cm. of water.

Complications

Minor degrees of ascites occurred, and in one case existing inguinal herniae were aggravated. Abdominal discomfort was complained of by a few patients for the first 24 or 48 hours after a refill, and was usually caused by injecting too much air, but one patient (Case 6) had persistent abdominal pain, which led to the abandonment of treatment. The proper amount of air for the individual patient can soon be determined.

Free abdominal fluid was detected clinically during the course of treatment in four patients. This seemed to cause no inconvenience except for the splashing noise as the subject turned over in bed or stooped to tie his shoe-lace.

Other complications of pneumoperitoneum are listed by Banyai (1946), and include air embolism, mediastinal emphysema, subcutaneous emphysema, umbilical and scrotal pneumocele, aggravation of existing herniae, and accidental perforation of the intestine. The latter is extremely rare, and is an unlikely complication unless a loop of bowel is fixed to the anterior abdominal wall by adhesions.

Results

Of the nine patients treated by pneumoperitoneum, six have stated that they have obtained definite benefit. This was mainly shown by the disappearance of dyspnoea and an increase in the amount of exercise which could be taken. Three patients obtained no benefit after three months' treatment.

Vital Capacity.—The changes in vital capacity are recorded with the individual case histories. On the whole there is a significant increase during treatment, but not so striking as that reported by Furman and Callaway in their patients.

Diaphragmatic Excursion.—The range of movement of the diaphragm between inspiration and expiration was measured radiologically on a film taken by the double exposure technique (see Table).

Diaphragmatic Excursion

Case	Before Treatment		After Treatment	
	Right Side (cm.)	Left Side (cm.)	Right Side (cm.)	Left Side (cm.)
1	0·8	0·9	2·1	1·0
2	0·8	0·9	2·7	2·6
3	0·6	0·9	2·4	3·0
4	1·0	0·5	3·2	3·7
5	1·8	1·2	2·8	3·0
6	2·3	2·6	2·1	1·6
7	0·2	1·5	2·1	3·0
8	2·1	2·1	2·3	2·5
9	0·3	0·5	3·0	3·2

Haemoglobin and Red Blood Cells.—No significant alteration from the original levels of haemoglobin and the red-cell counts could be demonstrated in any case after treatment by pneumoperitoneum had been established.

Case Histories

Case 1.—A man aged 45 had had asthmatic attacks for 17 years. He developed pneumonia two years ago, which further aggravated his poor exercise tolerance. His convalescence was prolonged and he has remained very cyanosed since. Before beginning pneumoperitoneum treatment he rarely ventured out of his house. There has been no congestive cardiac failure. His blood pressure was 110/80 mm. Hg. A pneumoperitoneum was induced on October 24, 1951, and was maintained with fortnightly refills of air varying between 800 and 1,000 c.cm. There was evidence of a small amount of free abdominal fluid

about four months after treatment began, but this disappeared spontaneously in six weeks. His vital capacity before treatment was 2,300 c.cm. and at three seconds 1,300 c.cm. Seven months later the readings were 2,650 and 1,900 c.cm. respectively. Although still cyanosed, he could get about for walks in good weather, and maintained that he could not do without his refills.

Case 2.—A man aged 57 dated his incapacity to an attack of pneumonia seven years previously, since when he has suffered shortness of breath, sufficient to cause him to give up all work. His case notes show, however, that he had been subject to winter bronchitis for several years before that. Before treatment he was completely incapacitated, and even slight exertion in the house made him breathless. He has never had congestive cardiac failure. His blood pressure was 150/100 mm. Hg. A pneumoperitoneum was induced on October 24, 1951, and was maintained with refills of 800 c.cm. of air every fortnight. The vital capacity before treatment was 2,400 c.cm. and at three seconds 1,150 c.cm. During treatment the vital capacity has averaged 2,600 c.cm. and at three seconds 1,250 c.cm. Ascites developed about five months after treatment began, but was negligible in amount and disappeared spontaneously. Improvement in exercise tolerance was remarkable in this patient, so much so that he developed intermittent claudication of the right leg two months after the beginning of treatment.

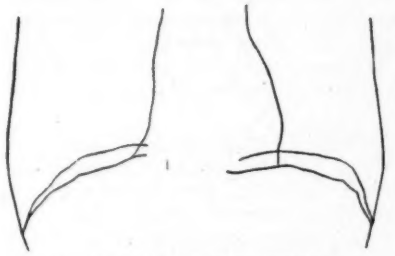

FIG. 1.—Case 3. Diaphragmatic excursion before treatment.

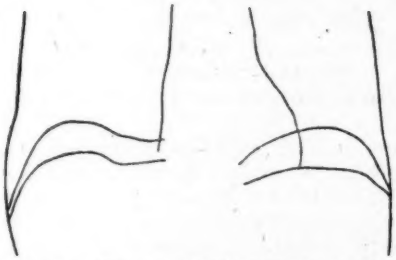

FIG. 2.—Case 3. Diaphragmatic excursion during treatment with pneumoperitoneum.

Case 3.—A man aged 65 had suffered from bronchitis for many years, and had severe pneumonia two years ago, after which congestive cardiac failure developed. Convalescence was prolonged, and he was always extremely breathless, even at rest, and his ankles became swollen in the evenings. His blood pressure was 155/80 mm. Hg. An *x*-ray film confirmed the presence of gross emphysema. A pneumoperitoneum was induced on December 14, 1951, and was maintained with an average of 800 c.cm. of air every fortnight. The vital capacity before treatment was 1,900 c.cm. and 1,750 c.mm. at three seconds. During treatment the readings were 2,150 and 1,500 c.cm. respectively. This patient admitted to no improvement during treatment, and he continued to show signs of mild congestive cardiac failure. The pneumoperitoneum was abandoned four and a half months after it was begun.

Case 4.—A man aged 73 had suffered from chronic bronchitis and shortness of breath for 27 years. Since 1946 he has been an inmate of the chronic sick section, and could move only short distances with help. He was orthopnoeic and extremely cyanosed. An *x*-ray film of the chest confirmed the presence of gross pulmonary emphysema with practically no diaphragmatic movement. No episodes of congestive heart failure had been reported during his eight-year stay in hospital, but he was confined to bed most of the day. His blood pressure was 140/80 mm. Hg. A pneumoperitoneum was induced on December 14, 1951, and thereafter refills of 500 c.cm. of air were given once a week. The vital capacity before treatment was 1,500 c.cm. and with a time limit of three seconds 850 c.cm. The readings two months later were 1,450 and 1,000 c.cm. respectively. There was no subjective or objective improvement in this case; he remained bedridden and very dyspnoeic, and, as the intra-abdominal pressure rose, bilateral inguinal herniae became aggravated, and treatment was abandoned after nine weeks.

Case 5.—A man aged 60 gave a 16-years history of shortness of breath and attacks of bronchitis. He contracted a severe suppurative pneumonia a year ago, which resulted in some fibrosis in the right upper lobe. Breathlessness became notably worse after this episode, but he could walk slowly for about half a mile. He has never had congestive cardiac failure. His blood pressure was 150/90 mm. Hg. A pneumoperitoneum was induced on January 14, 1952, and thereafter refills were continued every fortnight, the average volume of air given being 700 c.cm. A moderately large ascites developed ten weeks after the start of treatment but seemed to cause no discomfort. The fluid was turbid, containing polymorphonuclear cells, and a growth of a coagulase-negative staphylococcus was obtained. The fluid disappeared within a week after the patient was put to bed and given a course of penicillin. The vital capacity before treatment was 1,500 c.cm. and with a time limit of three seconds it was 1,250 c.cm. These figures became 1,950 and 1,500 c.cm. respectively two months after the start of treatment. Improvement in exercise tolerance was moderately good.

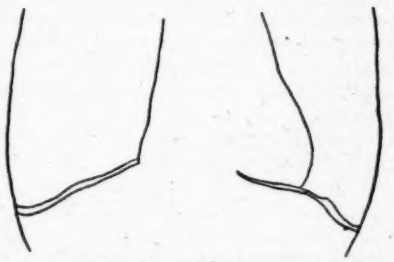

FIG. 3.—Case 4. Diaphragmatic excursion before treatment.

FIG. 4.—Case 4. Diaphragmatic excursion during treatment with pneumoperitoneum.

Case 6.—A man aged 54 had remained well up to six years ago, when attacks of bronchitis and asthma developed. These attacks became more frequent, and after an attack of pneumonia one year ago his dyspnoea was much worse. For some time before admission to hospital he had been severely incapacitated and confined to his home. He was cyanosed and orthopnoeic, and an *x*-ray film of his chest revealed gross emphysema. It was evident that the severity of his dyspnoea was due in part to bronchospasm. There was no history suggestive of congestive heart failure. His blood pressure was 120/70 mm. Hg. A pneumoperitoneum was induced on January 14, 1952, and after it was established refills averaging 700 c.cm. were given once a fortnight. The vital capacity before treatment was 2,000 c.cm., and at three seconds 1,150 c.cm. Two months later, during treatment, the figures had not changed appreciably, being 1,850 and 1,100 c.cm. respectively. There seemed to be much improvement in exercise tolerance during the initial stages of treatment in hospital, but after discharge the attacks of asthma returned and he relapsed into his previous dyspnoeic condition. After persisting with the pneumoperitoneum for three months it was considered that there was going to be no improvement, and treatment was discontinued.

Case 7.—A man aged 47 had been troubled with shortness of breath and asthmatic attacks for the past 17 years. He was admitted to hospital two years ago, having sustained a spontaneous pneumothorax on the right side, presumably due to rupture of an emphysematous bulla. His exercise tolerance had become very poor during the past four years,

and he could walk only a few yards without becoming breathless. An *x*-ray film of the chest showed the typical features of emphysema. There has been no congestive cardiac failure. His blood pressure was 140/90 mm. Hg. A pneumoperitoneum was induced on January 14, 1952, and subsequent refills have amounted to 900 c.cm. a fortnight. A small amount of free peritoneal fluid was detected ten weeks after the start of treatment, but this disappeared spontaneously two weeks later. The vital capacity before treatment was 1,900 c.cm. and with a time limit of three seconds 1,030 c.cm. These figures had improved two months later to 2,100 and 1,300 c.cm. respectively. The improvement in general well-being and exercise tolerance was most gratifying. He can walk about outside with less dyspnoea than previously and he also sleeps more comfortably owing to improved breathing.

Case 8.—A man aged 52 was admitted to hospital in April, 1952, because of severe breathlessness and cough. He gave a history of having had chest trouble for 20 years, including frequent attacks of bronchitis, and hay-fever. His breathlessness was such that he was able to climb a flight of stairs at home only once a day, and even that amount of exertion disabled him for fifteen minutes. There was no history suggestive of congestive cardiac failure. His blood pressure was 160/80 mm. Hg. An *x*-ray film of his chest confirmed the presence of marked pulmonary emphysema. The vital capacity was 1,750 c.cm., and the reading with a three-seconds limit was the same. After induction of a pneumoperitoneum on April 21, 1952, refills were carried out twice a week while in hospital and then fortnightly after discharge, an average of 700 c.cm. of air being given. The vital capacity during treatment became 1,900 c.cm. and with a time limit of three seconds 1,500 c.cm. Symptomatic improvement was good; he was able to take much more exercise than before admission to hospital, and his exercise tolerance continued to improve.

Case 9.—A man aged 46 first noticed that he was becoming breathless on exertion when he was 22. He continued to work at a cotton mill, but his cough and dyspnoea became worse and he had to give up all work in 1941. He has had pneumonia three times, the worst attack being in 1936. Before treatment he could walk about half a mile very slowly and with a great deal of effort. He does not give a history suggestive of congestive cardiac failure. His blood pressure was 130/90 mm. Hg. An *x*-ray film of the chest confirmed the presence of pulmonary emphysema with very little diaphragmatic movement. A pneumoperitoneum was induced on April 29, 1952, and while in hospital refills were given twice weekly until it was established. An average of 800 c.cm. of air was given once every two weeks as an out-patient. The vital capacity before treatment was 1,450 c.cm., and with a time limit of three seconds 880 c.cm. Seven weeks after the start of treatment the readings had become 1,950 and 1,200 c.cm. respectively. He has improved tremendously; his exercise tolerance is better than previously and he can walk longer distances without becoming so breathless.

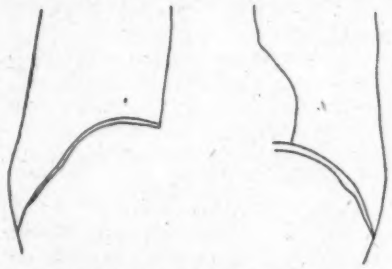

FIG. 5.—Case 9. Diaphragmatic excursion before treatment.

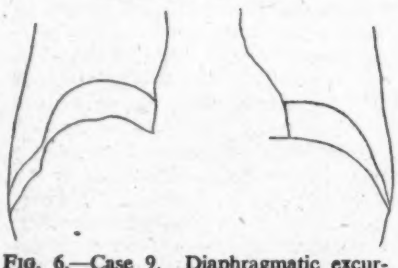

FIG. 6.—Case 9. Diaphragmatic excursion during treatment with pneumoperitoneum.

Discussion

After several months' experience of this particular treatment it was possible to select more accurately the type of case that would derive benefit from it, and exclude those showing certain features now known to be contraindications. The latter may be best illustrated by the three cases which showed no improvement. Case 3 had signs of congestive cardiac failure for two years before treatment was instituted; this was not gross, and was manifest by congestion of the veins in the neck, some swelling of the ankles after exercise, and a little engorgement of the liver. Case 4, practically bedridden for six years in the chronic ward because of exertional dyspnoea and considered to have myocardial failure, made no response to treatment. We believe that any benefit which pneumoperitoneum might have is not enough to overcome the effects of established failure of the myocardium.

A feature of Case 6 was the frequent attacks of severe asthma. Despite the favourable reports on the treatment of asthma by pneumoperitoneum made by others, we found that it had not the slightest effect; in fact, the violent muscular efforts during an attack of asthma seemed to cause considerable pain in the abdominal muscles, which were already stretched by the pneumoperitoneum. We would exclude those cases, therefore, in which asthma is a marked feature.

The emphysematous subject is particularly liable to attacks of bronchitis, which have the effects of almost complete disablement. Several patients under treatment with pneumoperitoneum developed bronchitis during the winter months, and we found that any good effect of the treatment was nullified until the infection was controlled and the sputum again became scanty. Some of the fluctuations in the vital capacity might be explained by the presence or absence of bronchitis at the time the records were made.

On the other hand, it is necessary to examine why there was no great increase in the vital capacity in our patients despite the fact that the diaphragmatic excursion had been improved.

Banyai (1946) found that in a group of tuberculous patients undergoing pneumoperitoneum treatment the vital capacity showed an average decrease of 14.7%, while Furman and Callaway reported a dramatic increase in vital capacity in their emphysematous patients—two, indeed, having double their pre-treatment values.

Meakins and Christie (1934) pointed out that, whereas the normal functional residual air amounted to 35–40% of the total lung volume, in severe emphysema the figures might reach 70 to 80%. And, since the vital capacity is also reduced, the resting tidal air and vital capacity may approach equality.

We think that in those of our cases in which the exercise tolerance improved and yet was not reflected in a greatly increased vital capacity the effect of the improved function of the diaphragm was to decrease the residual air in proportion to the total lung volume, thus allowing improved aeration.

Antispasmodics such as ephedrine and aminophylline were found to be a valuable adjunct to pneumoperitoneum in cases in which there was a tendency to bronchospasm. In patients who are not subject to such attacks ephedrine is probably of little value, since Whitfield *et al.* (1950) showed that this drug produced no alteration in the subdivisions of lung volume in emphysematous subjects without bronchospasm.

Finally, the psychological effects of a new form of treatment on patients who have been incapacitated for years must be remembered. There is no doubt that the enthusiasm of the operator is often reflected in the patient, at least during the first few weeks, and certainly many of the glowing testimonials from some of our patients could be attributed to this. After due allowance has been made for this, however, we believe that there has been a genuine

improvement in most of the cases treated by pneumoperitoneum, which warrants its use in a larger series of patients.

A pneumoperitoneum may be continued indefinitely, refills being given at weekly or, more usually, fortnightly intervals, although in Reich's experience the high position of the diaphragm was maintained for long periods after the pneumoperitoneum was discontinued. This he attributed to the fact that during treatment the patient performed an unconscious respiratory exercise, relaxing the diaphragm and contracting its antagonists, the abdominal muscles, and continued to do so without the aid of a pneumoperitoneum.

Summary

A brief review of pulmonary emphysema and methods of accepted treatment is given.

The progressive nature of the disease and the misery which is the lot of those severely affected warrant exploration of all new avenues of treatment.

Nine severe cases of pulmonary emphysema treated by pneumoperitoneum are presented, with results encouraging enough to justify further study. The rationale of pneumoperitoneum is to increase the intra-abdominal pressure sufficiently to cause elevation of the diaphragm during expiration, and yet not to impede its contraction during inspiration. Increased excursion of the diaphragm is thus obtained, with consequent improvement in pulmonary ventilation.

The vital capacity was increased in seven cases and the excursion of the diaphragm, measured radiologically, was improved in all cases. No improvement was evident in two cases with a history of congestive cardiac failure and in one case with asthma.

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In his preface to the annual statistical report of the Middlesex Hospital for 1952, Colonel the Honourable J. J. Astor, chairman of the board of governors, points out that, while in the past the main function of the report was to persuade the public to subscribe to the hospital's funds, its present task "is to say whether public money, assigned by Parliament for the upkeep of their hospitals, has been used to the best advantage." During the year under review there were 633,000 out-patient attendances at the hospital and its constituent institutions, compared with 582,000 in 1951. The physiotherapy clinic accounted for 219,000, of whom 10,000 were new patients; 117,000 attended the rheumatism clinic, and 40,000 attended for radiotherapy. In-patients numbered 14,800, a slight increase on the previous year. Good progress is reported in converting Latimer House, acquired in 1951 to serve as an institute of clinical research and experimental medicine, and the institute will be in action later this year.

SENSITIVITY STUDIES ON SHIGELLA SONNEI

BY

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This report concerns a study of the antibacterial activity of streptomycin, chloramphenicol, aureomycin, and terramycin against *Shigella sonnei*, together with observations on the suitability of these antibiotics for the treatment and control of Sonne dysentery.

Seventeen representative strains of *Sh. sonnei* were collected from separate outbreaks and isolated cases of Sonne dysentery which occurred in East Kent and Hertfordshire. The identity of the strains was confirmed by biochemical tests and agglutination to titre with specific typing serum. In addition the strains were grouped according to their bacteriophage reactions (Hammarström, 1947) and fermentative behaviour towards xylose (Bojlén, 1934) to ensure that the collection included a variety of types. Dr. Mayr-Harting, of Bristol, kindly performed the bacteriophage tests, and found that most strains belonged to phage type 3, a type commonly encountered in this country (Cooper and Mayr-Harting, 1951); five other phage types were represented (Table I). One of the strains fermented xylose; the others were xylose-negative and gave the usual biochemical reactions of strains isolated in this country (Carter, 1937).

TABLE I.—*Xylose Fermentation and Bacteriophage Reactions*

Strain	Xylose Fermentation	Phage Type
1, 2, 4, 7, 8, 9, 10, 11, 14, 15, 16, 17	−	3
3	−	85
5	−	32
6	−	66
12	−	23
13	+	? 17b

In-vitro Experiments

I. Tube Sensitivity Tests

Method.—Graded concentrations of each antibiotic were prepared in nutrient broth and tubed in 1-ml. amounts; 0.02 ml. of 1:100 dilution of an overnight broth culture of each strain was added to the appropriate set of tubes, which were then incubated at 37° C. The lowest concentrations of antibiotic required for growth suppression as judged by complete absence of turbidity and bacterial deposit were noted after 12, 18, 24, 36, and 42 hours' incubation.

Results.—The results of these tests, expressed as the average sensitivity of the 17 strains to each antibiotic, are given in Table II. It will be seen that the end-points increased progressively with prolongation of the incubation period beyond 12 hours. With the more stable antibiotics (streptomycin, chloramphenicol, and terramycin) the inhibiting concentrations rose slightly, to give readings at 42 hours approximately twice as high as those obtained at 12 hours.

TABLE II.—*Mean Sensitivity of 17 Strains After Varying Periods of Incubation*

Antibiotic	Hours' Incubation				
	12	18	24	36	42
Streptomycin	4·94*	6·23	7·29	7·76	8·47
Chloramphenicol	5·52	7·41	7·88	8·47	8·58
Aureomycin	1·01	2·00	4·00	7·53	9·06
Terramycin	2·06	2·94	3·76	3·88	4·35

* Minimal inhibiting concentration in μg./ml.

In the case of aureomycin, which is notoriously unstable at 37° C., there was a ninefold increase during the period of observation. In fairness to aureomycin, the readings obtained after the shortest workable incubation period—namely, 12 hours—were regarded as being most suitable for comparative purposes. These results are set out in Table III,

TABLE III.—*Range of Sensitivity of 17 Strains After 12 Hours' Incubation*

M.I.C. at 12 Hours (μg./ml.)	Strepto-mycin	Chloram-phenicol	Aureo-mycin	Terra-mycin
8	4	7		
4	13	9		1
2		1	1	15
1			12	1
0·8			4	
Range ..	4–8	2–8	0·8–2	1–4

and may be summarized as follows: (1) all strains were naturally sensitive to all four antibiotics, being inhibited by 8 μg./ml. or less; (2) the strains exhibited a narrow range of tolerance to each of the four antibiotics; (3) on a weight-for-weight basis aureomycin and terramycin were slightly more effective as growth inhibitors than streptomycin and chloramphenicol.

II. Mode of Action of Antibiotics

Tests were carried out in order to compare the speed and mode of antibacterial action of the four antibiotics on *Sh. sonnei* in the presence of faecal matter.

Method.—A gramme of faeces from a healthy subject was suspended in physiological saline and the suspension distributed in four equal amounts. The specimens were seeded with approximately 100,000 Sonne organisms, and, after thorough shaking with beads to ensure an even distribution of the organisms, 0.02 ml. was withdrawn from each specimen and subcultured on plates of desoxycholate medium. The antibiotics under test were then added to the inoculated specimens, so that each specimen contained one of four antibiotics in a strength of 10 μg./ml. in one experiment and 500 μg./ml. in a second experiment. The specimens were incubated at 37° C., and at hourly intervals up to eight hours, and again at 24 hours, subcultures were made as described above. After overnight incubation the subcultures were examined and colonies of *Sh. sonnei* were identified and counted.

Results.—The results of these experiments are given in Tables IV and V. At a concentration of 10 μg./ml. streptomycin exerted a bactericidal action on *Sh. sonnei*, killing all organisms in less than five hours, while the other antibiotics were essentially bacteriostatic in their mode of action. At a concentration of 500 μg./ml. streptomycin, aureomycin, and terramycin were highly bactericidal, killing all Sonne organisms within one hour. Chloramphenicol effected a reduction in the population of Sonne organisms, but a number remained viable while in contact with 500 μg./ml. for as long as eight hours. These experiments were repeated several times with close reproduction of results. The tests were also carried out using nutrient broth in place of the faecal suspension, and again the results were comparable, although terramycin in this medium was slightly less bactericidal at the higher concentration.

TABLE IV.—*Survival Time of Sh. sonnei in Presence of 10 μg. of Antibiotic per Gramme of Faeces (pH 7.4)*

Antibiotic	Hours' Exposure									
	0	1	2	3	4	5	6	7	8	24
Streptomycin	56*	50	23	15	2	0	0	0	0	0
Chloramphenicol ..	57	46	60	39	50	56	37	30	33	10
Aureomycin	60	52	48	45	60	60	25	46	25	3
Terramycin..	50	40	43	53	50	30	30	33	26	2

* Number of colonies of *Sh. sonnei* on subculture.

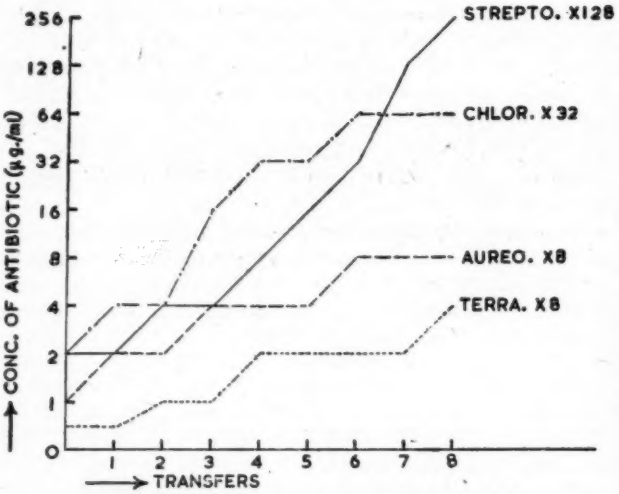
TABLE V.—*Survival Time of Sh. sonnei in the Presence of 500 μg. of Antibiotic per Gramme of Faeces (pH 8)*

Antibiotic	Hours' Exposure									
	0	1	2	3	4	5	6	7	8	24
Streptomycin	500*	0	0	0	0	0	0	0	0	0
Chloramphenicol ..	500	400	128	18	4	10	16	15	9	0
Aureomycin	500	0	0	0	0	0	0	0	0	0
Terramycin..	500	0	0	0	0	0	0	0	0	0

* Approximate number of colonies of *Sh. sonnei* on subculture.

III. Acquisition of Resistance

Method.—Sensitivity tests were carried out on three strains by the conventional tube-dilution technique as described in experiment I. After 18–24 hours' incubation at 37° C. the highest concentration of antibiotic which permitted distinct visible growth was noted, and the culture at this end-point was used to inoculate a fresh set of concentrations on a slightly higher range. This procedure was repeated daily for eight consecutive days.



Typical patterns of acquired resistance *in vitro*.

Results.—*Sh. sonnei* acquired resistance to streptomycin more readily than to the other antibiotics. The rate of acquisition of resistance, however, varied not only with different strains but also when the tests were carried out in duplicate on any one strain. But at least it can be stated that the lowest increase in resistance to streptomycin (a 64-fold increase) was equal to the highest rate of increase acquired to the other antibiotics. The strains developed an eightfold increase in resistance to both aureomycin and terramycin, and the results of repeat tests were quite consistent. Chloramphenicol did not favour the development of resistance to the same extent as streptomycin, the average increase on testing three strains being × 35. Typical patterns of the development of tolerance to each of the four antibiotics are given in the Chart.

Clinical Experience with Streptomycin

Of the four antibiotics, only streptomycin has been used in enough cases of Sonne dysentery to allow an assessment of its clinical value.

Sixteen acute cases and one carrier were treated with this antibiotic in a dose of 0.5 g. twice daily for two to three days. The drug was given orally, mixed with flavouring agents.

Clinical cure was achieved within 24 hours of beginning treatment in all acute cases, and bacteriological cure, as judged by repeated negative stool cultures (an average of 4.3 per patient), was prompt and complete in all but one case. A sample of faeces from this patient yielded four colonies of *Sh. sonnei* on the sixth day after treatment,

although two earlier post-treatment specimens had been negative. Three subsequent specimens from this patient gave negative results. No case relapsed clinically or bacteriologically during the follow-up period, which in some cases was as long as six months.

In addition, two cases of Sonne dysentery which relapsed one week after treatment with a sulphonamide were promptly cured clinically and bacteriologically with streptomycin. Another patient was treated with chloramphenicol for five days, with good clinical response, but a very heavy growth of *Sh. sonnei* was obtained from specimens of faeces sent during treatment and on the day after treatment. Streptomycin was then given, and the infecting organism disappeared from the faeces within 48 hours.

A female member of the staff of a residential nursery was found to be a symptomless carrier of *Sh. sonnei* during investigations following an outbreak of Sonne dysentery which had occurred in the nursery two months earlier. She was sent on leave, and a specimen of faeces submitted to this laboratory confirmed that Sonne organisms were being excreted in very large numbers. Streptomycin was given orally for two days, and three post-treatment specimens of faeces received at weekly intervals were negative for *Sh. sonnei*. The patient returned to work, and a specimen submitted five months later was again free of Sonne organisms.

Discussion

Specific treatment in Sonne dysentery should aim not only at effecting a prompt clinical cure but also at rapidly clearing the intestinal tract of *Sh. sonnei* in order to reduce the period of infectivity to a minimum. As the disease is usually mild and of short duration, it is difficult to assess the value of specific remedies on the basis of clinical response alone; the rate and completeness of clearance is probably a more reliable index of therapeutic efficiency and adequate control. The sulphonamides, particularly sulphadiazine and the poorly absorbed sulphonamide preparations, are of undoubted value in the management of bacillary dysentery, but Sonne organisms often persist or reappear in the faeces during convalescence (Fairbrother, 1944). Moreover, in certain parts of the world, for example Japan, the majority of strains of *Sh. sonnei* are naturally resistant to sulphonamides (Tateno, 1950).

Oral therapy with antibiotics is an obvious alternative to sulphonamide medication in Sonne dysentery, and the experiments described above help to predict which antibiotics are likely to be most useful in this disease.

Welch (1950) assayed the faecal excretion of chloramphenicol, aureomycin, and terramycin after the oral intake of 1 g., and obtained levels of approximately 500 μg. per gramme of faeces with each antibiotic. Streptomycin, which is not absorbed from the bowel, was found in even higher concentrations in the faeces (at least 9,000 μg./g.) by Zintel *et al.* (1945). These levels greatly exceed the concentrations which were required to inhibit the growth of all 17 strains of *Sh. sonnei* used in this study, and from this it is apparent that all four antibiotics are potentially effective in the treatment of Sonne dysentery. However, streptomycin, aureomycin, and terramycin were found by experiment to exert a rapid bactericidal action at concentrations obtainable in the faeces following oral administration, and in the case of streptomycin the lethal effect was evident when the concentration in the faeces was reduced to 10 μg./g. It is likely, then, that these three antibiotics, especially streptomycin, would effect a complete and permanent eradication of Sonne organisms from the faeces of clinical cases. On the other hand, chloramphenicol exerted only a weak bactericidal action at a concentration of 500 μg., and in theory it should be less efficient at ridding the faeces of Sonne organisms.

The efficacy of streptomycin in Sonne dysentery has been confirmed by clinical experience, both in the present study and by others, notably Ross *et al.* (1949). In fairness to chloramphenicol it should be added that Ross *et al.* (1950) obtained equally good results with this antibiotic, and it would seem that the theoretical objection to chloramphenicol mentioned above is probably not of significance in clinical practice.

Certain other factors would influence one in favour of streptomycin for the routine treatment of Sonne dysentery. It is relatively cheap and is readily available. It is non-toxic when taken by mouth, and, unlike chloramphenicol and aureomycin, does not irritate the gastric and intestinal mucosa—a point of some importance when treating an infection which itself produces gastro-intestinal upset. Moreover, it is palatable if flavoured, and is well tolerated by children. There are, however, two minor disadvantages peculiar to streptomycin: (1) the results of experiment III indicate that *Sh. sonnei* develops resistance slightly more readily to streptomycin than to the other three antibiotics, but it is unlikely that this disadvantage will prove of any consequence in clinical practice, since the duration of treatment will not normally exceed two or three days; and (2) an acute fulminating type of Sonne dysentery is occasionally met with in young children (Lewis and Claireaux, 1951), and Tatham *et al.* (1951) succeeded in isolating *Sh. sonnei* from the blood of such a case. Obviously an antibiotic which is absorbed from the bowel is to be preferred to streptomycin for the treatment of the septicaemic type of infection, or, if streptomycin is chosen, it should be given parenterally as well as orally.

Summary

Sh. sonnei was highly and almost equally sensitive to streptomycin, chloramphenicol, aureomycin, and terramycin *in vitro*, all test strains being inhibited by 8 μg./ml. or less.

All four antibiotics exerted a bactericidal action on *Sh. sonnei* in a concentration of 500 μg./ml., but the lethal effect of chloramphenicol was weak compared with the other antibiotics. Streptomycin alone was bactericidal at both low and high concentrations.

Sh. sonnei acquired resistance *in vitro* slightly more readily to streptomycin than to the other antibiotics.

Streptomycin, given orally, has proved a highly effective therapeutic agent in the management of Sonne dysentery.

My thanks are due to Dr. B. A. Thompson, Watford, for providing me with a few of the test strains, to Miss P. Reeves for technical assistance, and to the Wright-Fleming Institute of Microbiology for the supply of terramycin.

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Owing to fatalities amongst children, a meeting of branch representatives of the Pharmaceutical Society has requested the Ministry of Health to give publicity to the importance of tablets and other medicines being kept out of reach of children. It was also suggested that, in addition to advertisements, the Ministry should approach the B.B.C. and television authorities to produce a documentary to educate the public in the extreme potency of many of the medicines being dispensed nowadays.

CONTACT DERMATITIS DUE TO AMINOAZOTOLUENE

BY

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Recently we have encountered, quite independently, three cases of contact dermatitis due to the yellow aniline dye aminoazotoluene. This dye, which is readily soluble in fats and waxes, is a constituent in the red and green semi-solid inks used in a popular ball-pointed pen. It is also used in certain popular shoe polishes. We have been unable to trace any previous reference to cases of dermatitis caused by exposure to aminoazotoluene.

Case 1

A hospital nurse aged 21 suffered from an irritant rash on the ulnar aspect of both forearms, but worse on the right, for three weeks. It consisted of an irregular area of erythema with papules and papulo-vesicles. The appearances suggested a dermatitis due to something contacted during her work. When she stopped work for a week the rash improved considerably, but recurred during a period of study when she was not doing any ward work. This second attack showed similar features, except that there was a raised erythematous linear lesion on the left forearm. The patient readily remembered that this was where she had scratched herself with the point of her red-ink pen. She had been using this ball-pointed pen for about six weeks before the eruption started.

In view of these findings patch tests were done using various colours of semi-solid ink of the same make. It was found that, while the red and green inks gave a positive result in 24 hours, there was no reaction to the blue and black inks. The manufacturers of this pen kindly supplied the information that the only substance common to the red and green inks, and not used in any other of their inks, was the yellow dye—aminoazotoluene. A further controlled patch test, using 0.01% aminozatoluene in yellow soft paraffin, gave a positive reaction after 24 hours' contact.

From these results it appeared that the patient's eruption was due to skin sensitization to aminoazotoluene. The dermatitis healed within four weeks of ceasing to use the red-ink pen, and has not reappeared.

Case 2

A clerk aged 24 stated that she had suffered from a rash on her hands for five weeks, and was advised by her doctor to stay off work. Under his care the rash disappeared in two weeks, but returned on the evening of her first day back at work. She attended hospital four days later.

On examination she was found to have a dry papulo-vesicular eruption along the ulnar border of the right hand and little finger, and on the medial aspect of the tips of her third and fourth fingers. The skin around the left eye showed slight oedema and fine superficial scaling. The clinical picture suggested a contact dermatitis of occupational origin.

It was learnt that she was in contact with green semi-solid ink and carbon paper during her work, and before the second attack had accidentally smudged some green ink on her right upper eyelid. Whilst convalescing from the first attack at home she had used without mishap a similar ball-pointed pen containing blue ink. She had used a green-ink pen for six weeks before the initial skin eruption developed.

Patch tests to blue semi-solid ink and carbon paper were negative after 48 hours, but there was a brisk response to the green ink. The manufacturers kindly sent a sample of the yellow dye present in green and red semi-solid inks but absent in the blue ink. The illustration shows the results of different strengths of this dye (aminoazotoluene) diluted in arachis oil and left on the skin for 48 hours. After these results a patch test of aminoazotoluene 0.01% produced a distinct erythema after only 24 hours' contact. The patch tests, which were all controlled, did not cause any exacerbation of the original dermatitis.

Dermatitis caused by aminoazotoluene. Percentages indicate strength of dye used.

Case 3

A lady clerk aged 52 had suffered from an itching eruption of the anterior aspect of the right wrist for over a year. A few weeks before attending hospital it had spread up the forearm and also appeared on the eyelids. She had used a red-and-blue ball-pointed pen for about two years, and her work involved contact with accounts written in these same inks.

Patch tests read after 24 hours showed she, too, was sensitive to the red and green but not to the blue semi-solid ink. Subsequently a positive reaction was obtained after 24 hours' contact with 0.01% aminoazotoluene in yellow soft paraffin. This eruption cleared up 10 days after she stopped using the red ink, and had not recurred eight months later.

Special Investigations on Case 1

As this patient appeared to be extremely sensitive to this azo dye, further investigations were carried out to determine the critical levels of concentration and exposure time for the skin reaction to occur.

Determination of Threshold Concentration.—The following patch tests were done with decimal dilutions of aminoazotoluene in yellow soft paraffin. The patches were removed after 24 hours, and the sites of contact subsequently examined at regular intervals.

0.1%	Positive at 24 hours
0.01%	" " 28 "
0.001%	" " 72 "
0.0001%	No reaction noted

Determination of the Threshold Period of Contact.—Aminoazotoluene (0.1%) in yellow soft paraffin was used in each case. Patches were removed after differing periods of

Test No.	Patch Contact Time	Reactions Observed After Certain Intervals of Time Recorded in Hours					
		9	12	21	37	45	72
1	5 minutes	−	−	−	−	−	−
2	10 "	−	−	−	−	−	+
3	30 "	−	−	−	−	−	+
4	1 hour	−	−	−	−	+	+
5	3 hours	−	−	+	+	++	++
6	6 "	−	+	+	++	+++	+++
7	9 "	−	+	+	++	+++	+++
8	12 "	−	+	++	+++	+++	+++

contact with the skin and the sites examined at regular intervals (see Table). Further investigations showed that a longer exposure time was necessary to produce a reaction when lower concentrations of the dye were used. It would thus appear that, within certain limits, there is an inverse relationship between the critical levels of exposure time and concentration.

Summary and Conclusions

Three female cases of contact dermatitis due to the aminoazotoluene component in green and red semi-solid inks are described. In each case the distribution of the rash and history of the case suggested an exogenous dermatitis, and this was proved by subsequent patch testing.

The time taken to produce epidermal sensitivity was closely comparable in the first two cases—six to eight weeks: in the third case the interval may have been longer.

A high degree of epidermal sensitivity to the dye has been shown in each case. An attempt was made to demonstrate critical levels of concentration and exposure times in Case 1.

The dye seems, however, to have a low sensitivity index, as only these three cases have so far been published, and yet about two million red and green ball-pointed pens are sold annually in Great Britain. Furthermore, in the manufacture of the ink there have been no cases of dermatitis among the 70 workers who are exposed each day.

We are indebted to Dr. W. N. Goldsmith for permission to publish Case 1, and to Dr. P. J. Hare for drawing our attention to Case 3. Messrs. Biro Swan Ltd., and their chemists, Dr. Rosin Industrial Research Co. Ltd., have been most helpful throughout the investigations, and to them we proffer our grateful thanks.

APLASTIC ANAEMIA OCCURRING EIGHT YEARS AFTER T.N.T. POISONING

BY

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Among the commoner clinical manifestations of trinitrotoluene intoxication are dermatitis, cyanosis, and gastritis. Toxic jaundice is less common and the incidence of aplastic anaemia is very small (Hunter, 1943). Despite the rarity of anaemia in T.N.T. workers a good many cases were reported in this country and in America during the two world wars. While most of these cases have had their onset during or immediately after a fairly long period of exposure, anaemia occasionally develops after a latent period free from exposure. Panton (1917) described the clinical onset of aplastic anaemia in a patient whose exposure to T.N.T. had ceased nine months previously. Both toxic jaundice and aplastic anaemia may develop in the same patient, and Evans (1941) reported the occurrence of aplastic anaemia nine weeks after recovery from an attack of toxic jaundice.

The present communication concerns a patient who suffered from toxic jaundice after two months' exposure to T.N.T. in 1943, and developed a fatal aplastic anaemia early in 1951.

Case Report

The patient, a man aged 45, was employed as a maintenance engineer in a large motor works. Until 1943 he had worked as a builder and his health had aways been good. In that year he started work in a filling factory, taking the usual precautions in handling T.N.T. and wearing a respirator. After two months' exposure he suddenly became ill with nausea, vomiting, and constipation which lasted for three weeks. He became jaundiced and the icterus persisted for two weeks. After full recovery he was employed in other departments of the same factory for a further two and a half years. During this period he worked with ammonium nitrate for six months, with aluminium dust for six months, on machine cleaning and maintenance for four months, and with ammonium nitrate again for six months.

After the war he worked for short periods in a brewery and an ice-cream factory before joining the motor works where he had been employed for the five years preceding his admission to hospital. His duties here involved much contact with machine-lubricating oils, and early in 1951 he suffered from an occupational dermatitis of his hands which lasted for two months. At this time he began to feel tired and lifeless, and anaemic symptoms of dyspnoea on exertion, lassitude, headaches, and muscular pains became increasingly severe during the next six months.

In July, 1951, a blood count was carried out with the following result: Hb, 7.3 g. per 100 ml.; red cells, 2,200,000; white cells, 5,200 (13% neutrophils, 84% lymphocytes, 3% monocytes). The smear showed considerable anisocytosis. The patient was admitted to Bedford General Hospital under the care of Dr. J. L. H. Easton. At this time there were no physical signs other than pallor, a few petechiae on the thighs, and hepatic enlargement to about 1 in. (2.5 cm.) below the costal margin. Investigations showed a normal bleeding-time but the platelets were scanty. The stools did not contain occult blood. There was a histamine-fast achlorhydria. The plasma protein levels and hepatic-function tests were within the normal range. A sternal marrow examination revealed aplasia of red cells and granulocytes, with some 60% lymphocytes. Treatment with iron, vitamin B_{12}, and "plexan" did not produce any reticulocytosis or haematological improvement, and transfusions of 5 pints (2.8 litres) of blood were given.

On August 17 the patient was transferred to Addenbrooke's Hospital under the care of Sir Lionel Whitby. He was very pale but not jaundiced or cyanosed. There was some sacral oedema but no oedema of the ankles. Lymph nodes could not be felt. There was a diffuse purpuric rash on both legs, with occasional purpuric spots on the trunk. The sternum was not tender on pressure. There was no koilonychia or clubbing. Cheilosis, sore tongue, and mouth ulceration were absent. Hess's capillary resistance test was positive. No other positive findings were encountered; the liver and spleen could not be felt. A blood count now showed: Hb, 7.4 g. per 100 ml.; red cells, 2,400,000 per c.mm.; P.C.V., 20.4%; M.C.H., 31 $\gamma\gamma$; M.C.V., 85 μ^3, M.C.H.C., 36.4%; M.C.D., 7.1 μ; reticulocytes, 0.1%; leucocytes, 1,700 per c.mm.; differential count, neutrophils 67 (stab cells 50, segmented 17), lymphocytes 1,600, monocytes 34 per c.mm; platelets, 1,000 per c.mm.; E.S.R., 68 mm. in 1 hour, corrected to 18 mm. in 1 hour. Bleeding time was seven minutes and clotting-time 12–20 minutes on several occasions. Clot retraction was poor. The prothrombin content was 62% of average normal (Quick's one-stage method).

A sternal marrow examination on August 20 showed that the marrow was hypoplastic, with many lymphocytes and plasma cells, occasional tissue mast cells, and large numbers of degenerate cells. The differential count figures were: neutrophil polymorphs 2.4%, eosinophils 0.6%, metamyelocytes 3.6%, myelocytes 4.2%, promyelocytes 1.4%, lymphocytes 66.8%, plasma cells 7.4%. Normoblasts 12.2% (early 1.2%, intermediate 4%, late 7%), proerythroblasts

0.4%, tissue mast cells 1.2%. The degenerate cells were not included in the differential count, but they often contained phagocytosed pigment and may have been chiefly reticulum cells.

In view of the suggested relationship between tissue mast cells and marrow aplasia (reviewed by Fadem, 1951), the possibility that the prolonged clotting-time might be due to hyperheparinaemia was considered, and it was found that the clotting-time could be returned to normal by the addition *in vitro* of a suitable quantity of protamine. Protamine sulphate was given intramuscularly to the patient in doses of 40 mg. four times daily for three days, but had no effect on the clotting-time, and was discontinued.

The haemoglobin level fell steadily at the rate of 1 g.% every five to seven days, and there were several severe epistaxes during the first two weeks after admission. A small abscess under the chin developed, and the cervical glands enlarged, but this was controlled by systemic penicillin. Small transfusions were given at frequent intervals, but no evidence of marrow activity was evinced. The leucocyte count fluctuated between 750 and 3,000 cells per c.mm., with neutrophils from 10 to 150 per c.mm. The platelets varied between 1,000 and 20,000 per c.mm.

On September 8 a course of A.C.T.H. was started, 100 mg. daily in divided doses being given for 10 days. No effect was produced on either the clinical condition or the haematological state.

On September 22 severe frontal headache developed, accompanied by nausea and vomiting. Slight neck rigidity and a small retinal haemorrhage in the right fundus occurred, but no other abnormalities were found in the central nervous system. Within 12 hours the breathing suddenly became stertorous and unconsciousness followed. Both pupils were contracted to pin-points and did not react to light. The arms were flaccid, but with tendon reflexes still present and equal. After a short period of coma the patient's respiration failed completely and he died.

Post-mortem Examination.—A large spreading haemorrhage was found extending throughout the left cerebellar hemisphere and breaking through on to the surface. The meninges appeared normal. There was evidence of submucosal haemorrhage throughout the small intestine and in the renal pelvis and ureter on the right side. The haemopoietic marrow of the femur was completely replaced by yellowish fat, and the marrow of the sternum and vertebrae was also very pale and suggestive of hypoplasia. The spleen and liver were congested and gave a positive Prussian blue reaction. Histologically the bone marrow contained very few cellular elements, and these were mostly lymphocytes and normoblasts. The liver showed a few scattered areas of large droplet fatty change, but there was no sign of fibrosis. Apart from congestion and scattered haemorrhages there were no other striking abnormalities in any organs.

Discussion

This case history presents an unusual combination of facts. There is no doubt that the patient was exposed to T.N.T. and developed a toxic jaundice in 1943, that he was later subject to an occupational dermatitis of the hands after working with machine oils in 1950, and that he died in 1951 from an aplastic anaemia. The relationship between these episodes is largely a matter for conjecture. There seems to be no known association between exposure to oil and the development of haematological disorders, and it is difficult to believe that T.N.T. could still exert a delayed effect after eight years. The most likely explanation of the circumstances in the light of present knowledge is that the anaemia was a coincidental primary marrow aplasia, unconnected in any causal way with the toxic agent to which the patient had previously been subjected. It is not impossible, however, that other cases of long-delayed anaemia may have occurred after T.N.T. poisoning and been dismissed as coincidental primary disorders, and it is hoped that this report may stimulate publication of such case histories if they exist.

Summary

The case is reported of a patient who suffered from toxic jaundice after exposure to T.N.T. in 1943, who developed an oil dermatitis in 1950, and who died from aplastic anaemia in 1951.

The possible relationship between these episodes is discussed.

I am grateful to Sir Lionel Whitby, regius professor of physic in the University of Cambridge, for permission to report this case.

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HAEMOPHILIA WITH RESPIRATORY OBSTRUCTION

BY

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Among the more serious hazards of the haemophilic patient's life is haemorrhage into the tissues of the mouth, pharynx, and larynx. Fortunately, this seems to be an uncommon site for bleeding to occur; indeed, we have been able to trace only 14 cases in the literature since 1910. Of these, 11 suffered from respiratory obstruction of varying degree. A survey of the records of the Western Infirmary, Glasgow, makes us wonder, however, if this is not a more common complication of haemophilia than that number of published cases leads one to believe. During the period 1936–51 34 haemophiliacs were treated: as so often happens, many had to be admitted more than once with haemorrhages at different sites, the total number of episodes being 112. Three instances of oral bleeding each associated with respiratory obstruction were found, and it was noted that blood transfusion and other medical measures were enough to bring the condition under control.

The following report concerns another case which came under our care at the same hospital. The problem that confronted us was to decide how best to combat the threat of suffocation. It was the feeling of all who saw the patient that surgical intervention was imperative, and a relief incision was made under the chin. As we hope to show, however, the maintenance of a clear airway by means of an indwelling endotracheal tube was probably the measure that really saved the patient's life.

Case Report

A youth aged 16, a known haemophiliac, was admitted to hospital on September 11, 1951. On the previous day he had complained of pain and a swelling under his tongue, and the swelling had gradually increased in extent. No injury or sepsis had been present to account for the lesion, though one molar tooth was carious and roughened.

When first examined the patient was pale, anxious, and moderately cyanosed. There was gross bleeding into the tongue, which practically filled the buccal cavity, and the submandibular and submental regions were also much swollen. At first there was only a slight degree of respiratory embarrassment, though swallowing was very difficult and his speech was painful and almost unintelligible. A haemarthrosis of the left knee was also present. The temperature was 97.4° F. (36.3° C.), the pulse 105, and the respiratory rate 22. The blood pressure was 125/70. The haemoglobin was 13 g.%.

Shortly after his admission a transfusion of fresh blood was begun, but this appeared to have little immediate effect on the local condition. The coagulation time was not estimated before the transfusion. Within three hours of admission the condition had advanced to such an extent that speech and swallowing became impossible and respiratory stridor was pronounced. The tongue had turned a deep purple colour and lay immobile, projecting between the teeth. The gums were bleeding and the cervical swelling had extended uniformly around the neck down to the level of the hyoid bone. Crepitations were heard at both lung bases.

In order to give more immediate relief a wide-bore needle was inserted in the midline below the chin into the base of the tongue. This met with no success even though the needle was moved in different directions and planes. It was therefore decided to resort to the more radical procedure, which we now describe in detail.

Operative Treatment

Premedication in the form of atropine sulphate, 1/100 gr. (0.65 mg.), was administered intravenously into the drip tubing, 10 minutes being allowed for its action.

The mouth, nose, and throat were prepared by spraying and painting with 5 ml. of 2% amethocaine hydrochloride containing 7 minims (0.42 ml.) of adrenaline 1 : 1,000. A well-lubricated No. 6 Magill nasal tube mounted on a Magill suction T-piece was passed blindly through the left nostril into the trachea. This tube was well tolerated, the relief to respiration being immediate. General anaesthesia was then induced with 10 ml. of 5% thiopentone and continued with nitrous oxide and oxygen, using a trace of trichlorethylene.

A vertical midline submental incision ¾ in. (1.9 cm.) in length was made. The deep fascia was incised and the base of the tongue and both submandibular fossae were explored, using both dressing forceps and a finger, but no clot or localized collection of blood was found. It became obvious that the haemorrhage was interstitial in type.

The wound was temporarily packed with gauze soaked in a solution of "thrombin topical," which controlled, for the time being at least, the bleeding from the wound margins. Penicillin tablets were then inserted and a small wick of gauze was left in. After operation the endotracheal tube was left in place, the T-piece being securely strapped to the face with adhesive plaster. An endobronchial suction catheter was passed and a large quantity of watery mucus removed. The patient made a rapid recovery from anaesthesia.

Post-operative Course

It was decided that the endotracheal tube would be better left *in situ* until the danger of asphyxia had passed. To relieve the discomfort caused thereby 2% amethocaine was sprayed down the tube from time to time during the first day. A clear airway was ensured by the passage of an endobronchial catheter, and suction was applied every 15 minutes for the first few hours and whenever necessary during the next four days. Penicillin was administered parenterally to reduce further the risk of a pneumonic complication. The patient received in all 3 pints (1.7 litres) of blood followed by an intravenous glucose drip.

During the next 36 hours the tongue became even more swollen and the question of tracheotomy was reconsidered. Dr. Gavin Young, oto-rhino-laryngologist to the Western Infirmary, was consulted, but he advised strongly against further surgical intervention. By the second day we decided that the endotracheal tube had been in long enough, but on its removal it immediately became apparent that the patient still required an artificial airway. Accordingly, a fresh tube was inserted, again through the nose, using the same anaesthetic technique. At the same time a Ryle tube was introduced via the mouth in order to replace the infusion therapy with a gastric milk drip. Crepitations persisted at the lung bases, but no more serious chest complication supervened. A persistent tachycardia of 140 to 160 a minute gave some anxiety. The submental wound continued to ooze for seven days. The coagulation time during the post-operative period remained about eight to nine minutes (capillary tube method).

By the fourth post-operative day the patient's condition was materially improved. The swelling of the tongue had diminished to a size which permitted the endotracheal tube to be replaced by a nasopharyngeal tube. With anaesthesia as before, a cut-down No. 6 Magill tube served the purpose, and it was placed so that its end lay just beyond the back of the tongue. Some eight hours later this too was removed, as the patient demonstrated his ability to breathe with the tube occluded.

Five days later he was given a further blood transfusion, consisting of 1 pint (570 ml.) of fresh blood and 1 pint (570 ml.) of packed red cells, since the haemoglobin level had fallen to 5.7 g.% and the red cells to 1,800,000 per c.mm. Thereafter convalescence progressed satisfactorily, and by the fifteenth day the swelling of the tongue and the floor of the mouth had completely subsided. He had also fully recovered his speech, which, incidentally, betrayed no hint of damage to the vocal cords.

It must be admitted that the haemarthrosis of the left knee received scant attention, though we are pleased to report that it had absorbed fully, without impairing function, by the time the patient left hospital.

Discussion

With this emergency it is a matter of surgical importance to know whether the haemorrhage is a localized collection of blood or a diffuse extravasation among the soft tissues of the mouth and throat. The case reported was an example of the latter type. The following also describe interstitial lesions : Lesné, Powilewiez, and Récamier (1921), Voit and Paus (1933), Endicott, Mitchell, and Qvist (1942), and Edmonds (1951). It is noted that Wintrobe (1946) and Davidson, Epstein, Miller, and Taylor (1949) merely refer to the formation of a haematoma. The paper by Endicott and his co-workers (1942) should be read for an appreciation of the anatomical aspects of the problem.

Early transfusion is obviously indicated and would appear to have provided adequate treatment in 6 of the 14 reported cases, as it also did in those which we found in the past records of our hospital. Of the remainder, seven received surgical attention. Six of these patients underwent tracheotomy, four of them dying (Lesné *et al.*; Voit and Paus; Endicott *et al.*; Edmonds). The two patients who recovered (Baird and Fox, 1943; Fox, Spencer, and Tocantins, 1946) caused considerable anxiety in the post-operative period, a major concern having been a persistent ooze from the tracheotomy wound. Troutt (1931) reported a case of a patient who recovered after a local incision of the tongue. In our case the incision that was made under the chin may have afforded an outlet for the blood and serum, but it is more likely, considering the nature of the lesion, that the exploration did more harm than good. It is questionable, in fact, whether or not surgical intervention is necessary in this condition.

We agree with the recommendation of Boyd (1950) that an attempt should be made to intubate the trachea before resorting to a tracheotomy or relief incisions. He chose the oral route in his case, and apparently to good effect. In our case the lingual swelling only just allowed the passage of a laryngeal swab carrier, and laryngoscopy would have

been impossible. Nasal intubation under local analgesia does not seem to be unduly difficult in these circumstances. The precaution was taken not to give thiopentone until the respiratory obstruction was overcome. Davidson *et al.* (1949) have stated that the local swelling tends to diminish in 24 to 36 hours. The critical phase in our case lasted four days, and no deleterious effects seemed to result from intubating the trachea for that period of time. There is no doubt that the absence of chest complications was largely due to the post-operative nursing care and to the assiduous bronchial toilet.

Summary

A case of respiratory obstruction in a haemophilic patient is described. This complication was due to a spontaneous interstitial haemorrhage into the tongue and the floor of the mouth. Three other cases from the same hospital are cited.

The management of the case reported consisted of blood transfusion, a submental incision, and nasotracheal intubation.

It would seem that intubation presents certain advantages over, and may be preferable to, tracheotomy in the treatment of this medical emergency. A Magill nasotracheal tube left in place for four days caused no obvious damage to the vocal cords.

We wish to thank Dr. J. A. W. McCluskie and Mr. E. G. Gerstenberg, in whose wards the patient was treated, for permission to publish this case.

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A CASE OF TALC GRANULOMA SIMULATING CARCINOMA

BY

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Post-operative complications arising from the use of talc as dusting powder for surgical rubber equipment were first described by Antopol (1933). Experimental talc granulomas were produced in dogs by Lichtman *et al.* (1946), and many cases of post-operative adhesions have been attributed to the use of talc in the last decade. Mackey and Gibson (1948) described a talc granuloma which was found 13 days after laparotomy. Walker (1948) reported a death from general peritonitis following small-bowel obstruction due to talc adhesions following the repair of strangulated femoral hernia. Swingle (1948) recorded another fatal case of post-operative intestinal obstruction due to talc adhesions. Ross and Lubitz (1949) reported a similar case. Postlethwait, Mason, and Morehead (1950) also reported seven cases of talc granuloma found partly in persistently draining post-operative sinuses, partly causing intestinal obstruction, and partly present in operation scars. Kidd and Wilson (1951) described a case of recurrent intestinal obstruction following appendicectomy at which adhesions containing crystalline material were found under polarized light. The value of modified starch as a substitute for talc has been recommended by Graham and Jenkins (1952).

The following is a report of a case of talc granuloma combined with an old-standing diverticulitis of the sigmoid colon which simulated carcinoma.

Case Report

A married woman aged 63 attended the surgical out-patient clinic on October 2, 1951, with 15 years' history of vague abdominal discomfort, constipation, some recent loss of weight, and poor appetite. She had also lately suffered from frequency and some discomfort on defaecation, together with a constant bearing-down sensation and backache. Cholecystectomy for gall-stones had been performed in Liverpool in 1946.

On examination her appearance was that of a middle-aged rather obese woman in moderately good general condition. There was a suspicion of an ill-defined mass in the L.I.F. Rectal examination revealed a fairly large, fixed, slightly tender mass in the pouch of Douglas which seemed connected with the uterus and suggested a uterine fibroid. On vaginal examination the mass seemed to lie behind and to the left of the uterus. The patient was referred to the gynaecologist, and an examination under anaesthesia was carried out on October 9, when the above clinical findings were confirmed.

Operation—On the same day a laparotomy was carried out and a tumour was found which apparently originated in the sigmoid colon and which was densely adherent to the uterus. The affected part of the sigmoid colon was mobilized fairly easily and a provisional diagnosis of either carcinoma or diverticulitis of the sigmoid colon, leading to the formation of an inflammatory mass with subacute obstruction, was made. The colon proximal to the tumour was greatly distended. In view of the subacute obstruction a transverse colostomy was carried out with the intention of resecting the affected part of the sigmoid colon at a later date. The patient was transferred to the general surgical ward, and the colostomy was opened on October 15.

Second Operation.—On October 31 the affected part of the sigmoid colon was resected with end-to-end anastomosis. No secondaries were found anywhere in the abdomen apart from enlarged glands in the immediate neighbourhood, which were easily included in the resection.

Convalescence was uneventful and the patient was discharged from hospital on November 29 to return at a later date for closure of her colostomy. A barium enema carried out on November 22 showed the barium flowing to the colostomy without delay. The *x*-ray report mentioned a few diverticula in the lower pelvic colon with some inflammatory changes.

Third Operation.—The patient was readmitted for closure of her colostomy, which was carried out on February 2, 1952, and she was discharged healed and having normal bowel actions on February 21. She has been seen in the surgical out-patient clinic repeatedly since, and her condition is quite satisfactory.

Pathology

The specimen consisted of 4 in. (10 cm.) of thickened sigmoid colon with 3 in. (7.5 cm.) of normal colon on each side, together with a sector of resected mesocolon which contained several enlarged glands in the immediate neighbourhood of the tumour-affected part of the colon. The macroscopic appearance of the tumour suggested either carcinoma or Crohn's disease. The part of the colon proximal to the tumour was hypertrophic and distended. The lumen of the affected part was considerably narrowed, but the mucosa of the entire specimen seemed intact. As a third possible diagnosis diverticulitis with peridiverticulitis

probably the result of a healed perforation of a diverticulum, had to be considered. There was a good deal of inflammatory oedema present.

Microscopical Examination.—The specimen was sectioned and the provisional report stated the lesion to be of an unusual inflammatory nature. The sections showed normal colonic mucosa, oedema and fibrosis of the submucosa, considerable hypertrophy of and some collagen deposits in the muscularis, and chronic inflammatory infiltration and fibrosis of the serosa. The lesion was stated to resemble Crohn's disease.

The specimen was also sent to Professor W. D. Newcomb, of St. Mary's Hospital, London, W.2, who confirmed the inflammatory nature of the lesion. He considered it to be a granulomatous condition due to small anisotropic particles (Fig. 2), probably from glove powder. He confirmed the presence of diverticula, and the hypertrophied muscularis was thought to be the result of chronic obstruction due largely to the adhesions and partly to the diverticula. Professor Newcomb reported: "There is no question that she has had some ruptured diverticula in the past which go as far as the fat round the colon. It is very interesting that some of the faecal material has gone out into the fat and has caused a foreign-body reaction rather similar to the type on the surface, but I think there are two separate conditions. She first had a diverticulitis which has largely healed and then has had a talc granuloma which has stuck the material to the uterus."

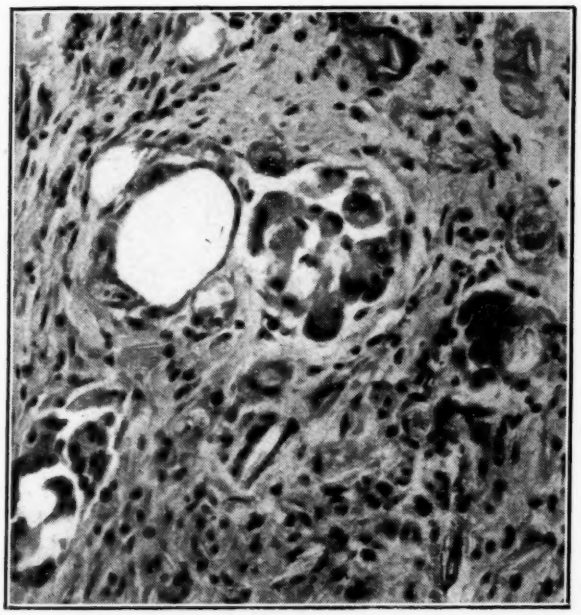

FIG. 1.—Showing the granulomatous nature of the condition, hypertrophy of the muscularis, oedema and fibrosis of the submucosa, and chronic inflammatory infiltration and fibrosis of the serosa. (×260.)

FIG. 2.—The same section under polarized light (×260), the talc particles appearing as birefringent crystals.

As previously mentioned, the patient had undergone a cholecystectomy in 1946, when the powder was probably introduced into the abdominal cavity. Fig. 1 shows a section through the granuloma and Fig. 2, taken under polarized light, shows the talc particles as birefringent crystals.

Comment

Talc is a hydrous magnesium silicate which can produce a pseudo-tuberculous non-caseating granulomatous lesion in the form of a chronic granuloma or foreign-body reaction. The talc particles can be seen under polarized light. The talc may originate from the outside of gloves, from perforated gloves, or from rubber drains which had been powdered with talc for autoclaving. The particles are visible under the polarizing microscope as birefringent crystals.

The lesions described in the past have been post-operative adhesions which have caused obstruction, tumour masses which have simulated carcinoma, Crohn's disease and tuberculosis, persistently draining sinuses, or single or multiple masses in operation wounds. Periods of years may elapse between talc contamination and the production of symptoms, but Mackey and Gibson's talc granuloma was found 13 days after laparotomy. Cornstarch is now recommended in various modified forms as a dusting powder for use on surgical gloves and drains.

Summary

A case of talc granuloma following cholecystectomy, combined with diverticulitis of the sigmoid colon, and simulating carcinoma, is described. The various lesions which can follow the use of talc as dusting powder for surgical rubber equipment are discussed.

I wish to thank Mr. R. S. Ninian for permission to treat and publish this case, Professor W. D. Newcomb for the interpretation of the microscopical sections, and Professor J. Gough for the preparation of the photomicrographs.

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The London fog of December, 1952, and the initiation of the second smokeless zone in this country (in Central Manchester) are two points noted in the 1952 Annual Report of the National Smoke Abatement Society which is published in the Society's 1953 Year Book, now available from the offices of the Society, Chandos House, Buckingham Gate, S.W.1, price 1s. The report expresses concern at the calm acceptance of the incapacity caused by the fog, and the Society has urged the Government to undertake a comprehensive investigation into the disaster. The Year Book also contains articles on laws relating to smoke, investigation of air pollution, and domestic and national fuel policy. There is also information about the Society and its services to members, as well as a directory of organizations concerned with air pollution, and a list of recently published papers on the subject.

ISHIHARA TABLES: COMPARISON OF THE NINTH AND TENTH EDITIONS

BY

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The assessment of the quality of isochromatic tables can only be empirical. Since their principal use, however, is for the detection of grossly colour-defective individuals who, by confusing red and green, are a danger to, and endangered by, modern traffic, a merely superficial test may provide a sufficiently valid result. But when a detailed answer is desirable, as when a certain amount of colour confusion can be tolerated, it will be found that clear-cut answers are obtained but rarely.

Criterion for Comparison

In the comparison of two different editions of the Ishihara tables it is necessary to test a given patient with both sets of tables in a random order so that the effect of memory becomes unimportant. Some sort of criterion must obviously be developed in order to evaluate the answers numerically. In the present instance, adequacy (A) and inconsistency (I), which are defined below, were chosen to compare the ninth and tenth editions of the Ishihara tables. All tables show at least one figure which the patient can or cannot read according to his colour vision. Some of them provide an alternative reading: thus Table 4 is designed to elicit the answer 29 or 70. If neither of these answers is given, and the patient reads 20 or 79 or any other number, this is considered to be a failure (F). The total number of F is subtracted from the number of tables (24, if the sample No. 1 is omitted) to yield the adequacy, A.

In itself, however, the adequacy is not a sufficient criterion. It may happen that the patient is diagnosed as normal following one table, red–green blind following another, and totally colour-blind according to a third. Again, another man may be completely red-blind by Table 22 and completely green-blind according to Table 24. Such diagnoses are not self-consistent. If, for example, the first patient gives six "normal" replies, then there are six inconsistencies (I=6), since if he were normal he would have shown it more than six times. Similarly, in the second case I=1, as one of the answers is unsuitable for an adequate diagnosis. A perfected diagnosis consequently requires A=24, and I=0—that is, all the answers must have been foreseen by the author and the 24 separate diagnoses must not contradict each other. The theoretical reason behind values of A different from 24 and values of I larger than 0 is that most colour defects are of an intermediate nature—that is, the patients are neither completely red-blind nor completely green-blind—and it is impossible to design a set of tables all of which would detect the defect. There are, moreover, individual variations in the spectral sensitivity which vitiate any attempt to standardize the tables in detail.

Results

In the present test, standard illuminating conditions were observed and 10 subjects examined. Of these, No. 1 was normal, No. 3 a deuteranope, and No. 5 totally colour-blind (a cone-monochromat, v.i.). The other defects were not identified. Patients 9 and 10, who do not occur in the accompanying Table, were also cone-monochromats and could not read any of the tables except the first. The results obtained were as shown in the Table.

The two editions thus provide equally self-consistent answers, but the later set appear to be more adequate. It is uncertain whether the difference in this respect is statistically significant.

Patient	Adequacy		Inconsistency	
	9th Ed.	10th Ed.	9th Ed.	10th Ed.
1	24	24	0	0
2	16	11	4	7
3	21	20	0	0
4	18	18	1	2
5	18	18	1	1
6	17	20	1	0
7	15	21	7	6
8	18	18	2	0
	147 (76%)	150 (78%)	16	16

Both sets of tables seem inadequate for the detection of total colour-blindness. If the patient suffers from rod-monochromatism an Ishihara test is generally superfluous because he will probably suffer also from photophobia, nystagmus, and reduced visual acuity. But such patients (not listed above) were not found to follow the Ishihara key: they were invariably successful with Tables 6 to 9. The reason for this is no doubt that the rod-monochromat's sensation of light is limited to the response mediated by the rods: this will allow blue–green figures on a background, isochromatic for the normal photopic sensitivity, to stand out as light numbers on a dark background. Although patients 9 and 10 failed on every table, patient 5 would not have been detected as being totally colour-blind had more reliable tests not been available. Again, another patient who would have been classed as totally colour-blind on the strength of the tables was found to be a protanope when tested more severely. These findings reaffirm the opinion that the Ishihara tables can be relied on to discover red–green defects: as regards total colour-blindness, however, the reliability of the answers they provide is much less.

Medical Memoranda

Congenital Syphilis of the Lungs

The following case of what is now a rare disease is reported because, despite knowledge of all the significant facts, difficulty was experienced in establishing the true nature of the lesions.

CASE REPORT

A woman aged 26 gave birth to a stillborn female infant. The mother alleged that the infant had been born some five weeks prematurely. She had had a miscarriage four and a half months after her marriage, but since that time had had one normal pregnancy and no further miscarriages. Prior to her confinement she had not attended an antenatal clinic, and it was only after the post-mortem examination on the infant had been completed that it was discovered that both the mother and father had positive Wassermann and Kahn reactions. There was no significant family history.

Post-mortem Findings.—The body was that of a female infant of 5 lb. 11 oz. (2.68 kg.) and apparently full maturity. There was gross oedema of the face, chest wall, and neck. A quantity of clear straw-coloured fluid was found in the pericardial sac. The heart was normal in structure and size. The ductus arteriosus and the foramen ovale were patent, the latter being very large and showing no valve. Both pleural cavities were full of clear straw-coloured fluid. Both lungs were atelectatic, and scattered throughout their substance were numerous globular tumours varying from about 2 mm. to 1 cm. in diameter. These tumours were yellowish white in colour, and, on section, rubbery and uniform in consistency. A number of the more superficial tumours caused bulging of the lung surface, and were quite sharply defined. The only other abnormalities discovered

were clear straw-coloured fluid in the peritoneal cavity, gross oedema of the brain, and suprarenals which were smaller than usual.

Histology.—Liver: numerous spirochaetes were seen, but the usual unicellular fibrosis was absent. Portal fibrosis, oedema, and excessive haemopoiesis were present. Pancreas, placenta, and kidneys: these appeared to be normal. Lungs: considerable numbers of spirochaetes were present in both the tumour and the non-tumour areas. A chronic interstitial pneumonia was present. In the nodules of solid tissue the bronchi showed up well and in some places the alveoli were lined with cubical epithelium.

COMMENT

The gross lesions in this case of congenital syphilis were exclusively in the lungs. Although microscopically spirochaetes were found in the liver the reaction to them appeared to be minimal in this organ. The gross lesions found at necropsy and the H. and E. sections presented a puzzling picture, and it was only the presence of spirochaetes in the sections stained by Levaditi's method which finally established the diagnosis.

The classical diffuse pneumonia alba was absent, and reference to numerous modern textbooks of pathology gave little information on discrete congenital syphilitic lesions in the lungs; they usually confined themselves to such remarks as, "Gummata may occur." The histological appearances of the tumours in this case were not those of gummata. It would seem that this form of congenital syphilitic lesion of the lungs is now so rare as not to merit description, in the standard textbook at least. However, on reading the older textbooks it is obvious that such lesions as have been described here were frequently seen by the pathologists of former days. An example of their descriptions, which tally in almost all respects with the lesions here recorded, may be quoted (Lancereaux, 1869): "The pathological product in the lungs always showed itself in the form of tumours, more or less numerous, of the size of a pea or a walnut, and these tumours were perfectly circumscribed, firm or softened at their centre and usually of a yellowish colour." Syphilis is still capable of presenting atypical lesions, and its presence must always be borne in mind when unusual pathology is encountered.

My thanks are due to Drs. R. D. Reid and A. B. Bratton for their help with the histology, to the department of pathology, Essex County Hospital, and to the Medical Director-General of the Royal Navy for permission to publish this case.

P. W. EDMONDSON, M.R.C.S., L.R.C.P.,
Surgeon Commander, R.N.

REFERENCE

Lancereaux, E. (1869). *A Treatise on Syphilis*, 2, 160. London.

A Finger Bud

I first saw the patient, a man aged 59, warming his hands by an old-fashioned grate, fingers outstretched, with the red glow of the fire showing through them. After a pause he saw me counting and proceeded to give the following story.

The swelling started, without pain, as a small pink, smooth elevation of the skin. He has no remembrance of injury. It grew slowly, and a long time passed before it became an embarrassment to him at whist drives, before all of which he would ask his wife to bandage the finger. Finally, the point was reached when his social life was jeopardized and he determined to be rid of it. Various suggestions made by his workmates were acted on. First, he rubbed it down regularly with the business edge of a matchbox. Next he plucked a hair from a horse's tail (there is a drayman's yard of a local brewery near by) and tied it round the base of the offending swelling. Finally, acting on the advice of his 90-year-old mother-in-law, he buried a part of the meat ration (beef) at the bottom of his garden and awaited results.

One day, while the swelling was still fairly small, he accidentally cut it at its base with the edge of a tin. It bled only a little, but afterwards its growth was fairly rapid, and it took on the angle shown in the photograph. By the time he came to the surgery (June, 1951) he had had the appendage for 10 years.

On examination the swelling was a little more than an inch (2.5 cm.) long, solid, and sausage-shaped. It was attached to the volar aspect of the middle finger, near the distal interphalangeal joint. The skin crease of that joint was obliterated, and the middle segment of the finger was thicker than that of the corresponding digit of the other hand. The grey-pink skin over it was thick and horny, particularly at its tip. In the acute angle it made with the finger the skin was dry and not infected. A small amount of painless movement was possible at the junction of bud and parent stem. A curious feature was the continuation for a short distance of the normal "whorl" pattern at its

base, but these characteristic markings rapidly gave way to a few short shallow linear creases, reminiscent of the "striae gravidarum." Although it was a cumbersome attachment the patient said he played darts and dominoes with ease.

A skiagram of the hand as a whole showed that there was no generalized or local bone disease, and that the tumour was in fact composed of soft tissue only. A tentative diagnosis of an implantation dermoid was made.

Benign tumours of the hand are uncommon. Mr. Norman Lake gives the following: lipoma and fibroma, cutaneous myxomatous cyst, implantation cyst, glomus tumour, enchondroma, exostosis and osteophyte, and osteoclastoma.

After a preliminary photograph the base of the finger was infiltrated with 2 ml. of 1% procaine hydrochloride on each side of the bone—"ring" block anaesthesia, as described so succinctly by members of the hand clinic at University College Hospital. The skin at the base of the swelling was incised elliptically; the swelling was transfixed by a ligature and retracted by the patient, using his other hand. It was seen that the tumour had a pearly white capsule. Gauze dissection was enough for its separation, and bleeding was slight. Separation of the proximal part in the substance of the middle segment gave no difficulty. Little dead space was left at the end of the enucleation, and after dusting the wound with sulphonamide-allantoin the skin edges were brought together with three interrupted nylon sutures without packing.

Healing was rapid and by first intention. The sutures were removed on the tenth day and movement at the distal interphalangeal joint became rapidly normal. Meanwhile, a section of the tumour revealed that it was a fibroma.

I thank Mr. John Hadland for the photograph; Dr. Jamison, of Watford, for his pathological report; and my senior partners, Dr. R. Fisher and Dr. D. Brown, for their encouragement.

RICHARD MAWSON, M.R.C.S.

Reviews

CANADIAN SURGERY

Textbook of Surgery. Edited by H. F. Moseley, M.A., D.M., M.Ch.(Oxon.), F.A.C.S., F.R.C.S.(Eng.), F.R.C.S.(C). With foreword by G. Gavin Miller, M.D., C.M., M.Sc., F.R.C.S.(C), F.A.C.S. (Pp. 896; 460 text illustrations and 46 colour plates. £5 10s.) London: Henry Kimpton. 1952.

This fine volume has been conceived and produced for the assistance of students undergoing a five-years course in surgery at McGill University with a view to specializing as surgeons. It may be taken to represent surgical practice in Canada at the present day on the highest level. It contains an immense amount of information in a small compass and in a very compressed form, as is suitable for those for whom it was written. It is not a book for a beginner, but the advanced student will find it invaluable, since it will enable him both to expand and to classify his knowledge.

It is impossible to review in detail a work by some 30 authors, but it is at once obvious that everywhere it reaches a high level. The various subjects have been treated all on a similar plan, resulting in a uniformity and a balance which are remarkable and a great credit to the editor. The volume is profusely illustrated, and the line and half-tone drawings are superb and add greatly to its value. Each section carries a short bibliography of recent work, providing easy access to the literature.

HENRY SOUTTAR.

CHANGING HEALTH SERVICES

Trends of Opinion about the Public Health, 1901–51. University of London Heath Clark Lectures 1951. By Professor J. M. Mackintosh, M.D., LL.D., F.R.C.P. (Pp. 202. 12s. 6d.) London: Geoffrey Cumberlege (Oxford University Press). 1953.

In these lectures Professor Mackintosh, out of his long and ripe experience both as a public health administrator and as a holder of professorial chairs in two great universities, traces the rise of personal health services, the growth of National Health Insurance, the advent of the Ministry of Health, the zenith of local government, and the steps which led to the establishment of the National Health Service in Great Britain.

As one who has promoted and seen the growth of health and hospital services by enlightened and progressive local authorities, he is unable to approve of the course that subsequent events have taken. As far back as 1909 Mr. John Burns, then president of the Local Government Board, was pressed by his medical adviser, Sir Arthur Newsholme, to take legislative action not only to carry out the recommendations of the Poor Law Commission but also to establish a national health service which would link up the public health work of local authorities with specialized and general medical practice. Administratively such a service would have been logical and sound. Mr. Burns hesitated, and meanwhile Mr. Lloyd George brought in the National Insurance Act, which created an *ad hoc* central authority in the National Insurance Commission. This mistake was rectified to some extent by the merging of the Commission in the Ministry of Health in 1919.

In 1929 a great step forward was made by the passing of the Local Government Act, which made a way for the abolition of the Poor Law, enlisted the co-operation of the voluntary hospitals, and created a hospital service under the major local authorities. Some administrators hoped that, by extending the provisions of the National Insurance Act to dependants and integrating the specialist services already provided by local authorities, a national health service could be provided economically by progressive stages.

Instead, the National Health Service Act of 1946 established a national medical service in which the hospital services and other services, hitherto administered by local authorities, were placed under regional hospital boards. Professor Mackintosh deplores this and also the creation of a special Children's Department of the Home Office. Referring to the making of separate, sometimes competing, occasionally conflicting services under local and central control, he adds: "It is hard to understand why we go on making the same mistake only to regret it when it is too late to mend."

Not everyone will agree with Professor Mackintosh's point of view, but all will appreciate the clarity and vigour with which he defends his thesis in the "Physic Act," his plea for greater attention to the preventive aspect of medicine, and the admirable literary style of these lectures.

ARTHUR S. MACNALTY.

OCULAR SURGERY

Ocular Surgery. By Hermenegildo Arruga, M.D. Translated from the third Spanish edition by Michael J. Hogan, M.D., and Luis E. Chaparro, M.D. (Pp. 936; 1,293 illustrations in text, 127 in colour. £15 6s.) London: McGraw-Hill Publishing Co. 1952.

Arruga's book first came out in his own language (Spanish) in 1946; the second edition, translated by Blum, of Geneva, was published in France in 1950; this translation into English has now appeared; and each successive edition has incorporated the advances which have appeared since the publication of its predecessor. The translations of this work indicate its unusually large appeal to ophthalmologists all over the world.

The plan adopted is not a comprehensive description of the innumerable types of surgical procedures and their minor variations; rather, the author confines his attention to those techniques which he himself considers best and which have been adopted by most leading ophthalmologists. The whole of ophthalmic surgery is systematically discussed, each section being of a standard so high that it is difficult to distinguish any one as outstanding. The section on the surgery of the eyelids includes not only an account of operative procedures for all the ordinary conditions so familiar to ophthalmologists, but also a useful account of plastic surgery of the lids. In the section on the cornea the various techniques for corneal grafting figure largely, and there is a more than usually interesting discussion on the technique of tattooing corneal scars in various colours. The chapter on the lens is a classic. As would be expected in a book written by Arruga, the discussion of detachment of the retina is lucid and elaborate, and in the section on the surgery of glaucoma, in addition to a description of the standard operations with their many variations, a most useful feature is the attention paid to the difficulties and complications which may arise. In the chapter on the surgery of the muscles the description of the numerous mechanical techniques which may be adopted is made interesting by the space given to the theoretical considerations which should determine the choice of the many techniques available. The author fully discusses that most difficult surgical problem, the treatment of intraocular foreign bodies.

Each section is written with great clarity, and the excellent illustrations make the descriptions in the text so clear that even readers who have little acquaintance with ophthalmic surgery can readily follow every step in the most elaborate operations. The descriptions of the minutiae in technique, and of the difficulties expected and unexpected which may arise, provide the best index of the vast experience and unusual surgical skill of the author. The book is extremely well produced, the illustrations are lavish and excellent, and the translators are to be congratulated in carrying out a responsible task with great fidelity to the original text without sacrificing the rhythm of the English language. It is a book which should be read and studied by anyone who practises ophthalmic surgery.

STEWART DUKE-ELDER.

MODERN TREATMENT

Modern Treatment Year Book 1953. Edited by Sir Cecil Wakeley, Bt., K.B.E., C.B., LL.D., M.Ch., D.Sc., F.R.C.S., F.R.S.Ed., F.R.S.A., F.A.C.S., F.R.A.C.S. (Pp. 348; illustrated. £1 1s.) London: Baillière, Tindall and Cox. 1953.

This book contains 38 articles by different contributors on a variety of subjects. The general practitioner is interested in three kinds of treatments: first, those he will carry out himself; secondly, those applied by specialists; and, thirdly, a group which overlaps the first and second according to the severity of the disease and the temerity of the practitioner. In which group a particular patient is placed depends largely on the judgment of the practitioner, so that he has not only to learn modern methods but also to pass judgment on them.

First, his own practice will be improved by reading Sir Cecil Wakeley ("Modern Treatment of Hydrocele"), Dr. Douthwaite ("Medical Treatment of Peptic Ulcer"), Dr. Gwyn Griffith ("The Modern Treatment of Rheumatic Fever"), and Dr. Thomas ("The Modern Treatment of Eczema").

Secondly, Mr. Stallard ("The Treatment of Glioma Retinae"), Mr. Barrett ("The Treatment of Carcinoma of the Bronchus"), and Dr. Phyllis Wade ("Modern Treatment of Cancer of the Thyroid") show the possibilities and limitations of surgery and radiotherapy in these conditions. Professor Strachan ("The Investigation and Treatment of Carcinoma of the Body of the Uterus") is refreshingly forthright in his opinion of the limitations of the general practitioner in this disease.

In the third group it is interesting to note how specialists differ about the proper range of the general practitioner. Whereas Mr. Ross Smith ("Treatment of Fractures of the Knee-joint") is prepared to leave quite serious injuries of the knee to the general practitioner, Mr. Plewes ("Modern Principles in the Treatment of Fractures") would bring his fracture clinic into the factories.

Obstetrics and gynaecology are well served, especially the treatment of infertility, although no one is willing to tackle artificial insemination very firmly. In this specialty I liked best Mr. Linton Snaith ("Modern Views of Treatment of the Menopause"). He treats the woman's mind as well as her hormones. Dermatology is not neglected. It is noticeable that here old methods are replacing new.

There are plenty of good illustrations and photographs. Reproductions of *x*-ray negatives are clear, of positives indistinct. I wonder why the negatives are not always used.

C. W. WALKER.

DENTAL ANAESTHESIA

A Manual of Dental Anesthesia. By Professor W. Harry Archer, M.A., D.D.S. (Pp. 192; 146 figures. £1 7s. 6d.) Philadelphia and London: W. B. Saunders Company. 1952.

The first half of this book, devoted to local analgesia, is admirable. The bold illustrations and the text have that stamp of the master which makes their meaning clear and their teaching helpful. The remaining 66 pages on general anaesthesia bear evidence of wide reading, but lack the touch of authority.

This second section opens with a timely warning against playing the dual role of dentist and anaesthetist, but Dr. Archer then appears to overlook the dangers of a dental surgeon advising his fellow practitioners in anaesthetic techniques which are a full-time study. Amputation has resulted only too often when thiopentone has been given by mistake into an artery instead of a vein. On two occasions the author injected it inadvertently into an artery, producing characteristic pain: "The injection of the anaesthetic solution was stopped and the pain disappeared. When a moment or two later a few more cubic cm. were injected, the same pain was provoked." Curare and thiopentone have been used on occasions by experienced anaesthetists to relieve laryngospasm. The suggestion that these drugs might be of value to dentists for the same purpose is asking for trouble. In Britain the anaesthetist will read with surprise, and the dental surgeon with concern, the nine pages of tests to which the patient should be subjected before being anaesthetized for a dental operation. Many of the views on general anaesthetics in this book are out of date, and some of the practices advocated cannot but be dangerous in the hands of the average dental surgeon.

R. R. MACINTOSH.

ALLERGIC DISEASES

A Manual of Clinical Allergy. By Professor John M. Sheldon, M.D., Robert G. Lovell, M.D., and Kenneth P. Mathews, M.D. (Pp. 413; illustrated. £2 2s. 6d.) Philadelphia and London: W. B. Saunders Company. 1953.

This illustrated manual reflects the outlook and methods used in the allergy clinics of the University of Michigan, Ann Arbor. It is not an ordinary textbook of allergic diseases, and not much space is devoted to the clinical description of such diseases. As the authors state, the book is "primarily for the physician interested in devoting part of his time to the treatment of allergy patients, or in establishing an allergy practice." It satisfies this demand extremely well, and I am sure that no such physician should be without this book. There are 20 chapters and 5 appendices. Evidence of wide experience and common sense appears on every page. Almost all the chapters deal in considerable practical detail with the methods used to establish an exact diagnosis of the cause or causes of a particular allergic condition, and give a reasoned and reasonable approach to treatment. One large illustrated section is on the identification of individual pollens, fungi, and moulds.

This book is beautifully printed and produced, reasonably priced, and singularly free from typographical errors. It may be highly recommended to all doctors interested in the practical investigation of allergic diseases as a companion to clinical texts on the subject.

C. J. C. BRITTON.

Those who enjoyed Dr. Richard Gordon's *Doctor in the House* will not be disappointed by the same author's *Doctor at Sea* (Michael Joseph, 10s. 6d.). The central character is a prim young assistant in general practice who takes a job as a ship surgeon on the advice of a psychiatrist, who thought this would be the best treatment for headaches induced by the seeming inevitability of a marriage arranged by the principal's wife. The voyage of a rather seedy cargo boat to South America gives the author even more scope for picaresque adventure than the life of a medical student. The young doctor, who gradually loses his primness, and his dissolute steward are very down-to-earth descendants of Bertie Wooster and Jeeves, and such stalwart stand-bys of British humour as sea-sickness, false teeth, Christmas dinners, D.T.s, corpses, and of course sex are all given a bright and breezy new look befitting a book about the sea. Dr. Gordon's crackling epigrams, sure touch, and slightly outrageous cynicism combine to make this an uproariously funny book.

Although the name of Abraham Trembley must be known to very few to-day, during his lifetime he made some of the greatest contributions to experimental morphology. His memoir on freshwater polyps (1774) demonstrated for the first time that certain animals could be artificially reproduced by division. He was the first to make permanent grafts of animal tissue, to prove that asexual reproduction by budding occurs in animals, and to witness cell division. Biography written too close to the life of its subject suffers certain disadvantages. Such a biography was prepared by Trembley's nephew three years after his death. Since then a considerable correspondence between Trembley and Réaumur has come to light. Full use has been made of this in a new biography by Dr. John R. Baker (*Abraham Trembley of Geneva: Scientist and Philosopher, 1710–1784.* Edward Arnold, 1952. 35s.). Dr. Baker puts the discoveries of Trembley in proper perspective against present-day biological knowledge. His admiration for Trembley and his painstaking study of his life and work have resulted in a fascinating and authoritative book, skilfully written and lavishly illustrated.

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DEBATE ON THE GUILLEBAUD COMMITTEE

Mr. Iain Macleod, Minister of Health, on Monday this week ably and convincingly defended the Government's decision to inquire into the Health Service through the Guillebaud Committee. Mr. Aneurin Bevan, in his attack on this decision, thought that the Central Health Services Council, which could act on its own initiative as well as on the stimulus of the Minister, was the right body to detect defects in the Service and advise the Minister on changes to remedy them. The Central Health Services Council could not advise the Minister to curtail the N.H.S., and this, according to Mr. Bevan, was the reason why the Minister was trying to side-track it by setting up an independent committee of inquiry. "What the Minister is anxious to do," said Mr. Bevan, "is to obtain an alibi in order to cut the Health Service." On the question of cost, Mr. Bevan made great play with the fact that where the initiative lay with the patient, that is in using the dental and ophthalmic services, the cost had gone down. The demand had begun to fall, he claimed, before the imposition of charges. But in the pharmaceutical services the initiative came from the doctor in making his prescriptions, and it was here that expenditure was going up. Mr. Bevan asserted that prescribing was too free and that general practitioners needed disciplining because they had not been as co-operative as they should have been. Another point made by Mr. Bevan was that the cost of the N.H.S. did not present the Exchequer with something that was unpredictable. The cost of the hospital services was entirely within the Minister's control; at this point Mr. Macleod observed that two-thirds of the hospital costs are governed by nationally negotiated or other agreements over which no one had control.

Mr. Macleod pointed out there were two questions to be answered: Is there anything to inquire into? and, if there is, What sort of body should make the inquiry? There was more disagreement on the second than on the first question. The first point he made against using the Central Health Services Council for this purpose was its size, consisting as it does of 41 persons. Secondly, as all these members had special interests in the Service he did not think they were the right persons to conduct the inquiry, but that it should be done by experienced persons independent of the professions and of the political parties. He wanted an impartial assessment made. Speaking on block grants, he observed that the financial system in this country was not designed to cope with such a problem as the hospital service. The case made for the block grant was that the present system was a disincentive to wise spending in the last months of the financial year, and that there would be greater economies if hospitals were allowed to plan three or five years ahead. On the other hand, the two-thirds of the cost of the hospitals related to salaries was outside the control of the Minister and the hospital authorities, and so was something to which the block grant could not apply. Nevertheless, he said subsequently that it would not be possible to control expenditure in the Health Service until they could control manpower. At the end of 1951 there were 328,000 full-time and 90,000 part-time staff in the hospitals—an increase over 1948 of 15% and 33% respectively. "We want," said Mr. Macleod, "a national manpower policy in the hospital field." He hoped it would be possible to get more staff into sanatoria, and particularly into mental hospitals, by limiting to some extent those hospitals which were already up to general staffing ratio.

The Government, said Mr. Macleod, viewed with the very gravest concern the present cost of the pharmaceutical services. This was a part of the Health Service which was not under financial control. The average cost of prescriptions had risen from 38d. in 1949–50 to 50.5d. in 1952–3, and for his estimates for the current year he had taken the figure of 52d. The number of prescriptions in England and Scotland ran into the figure of 241 million a year. The increased expenditure was due to a general rise in the cost of ingredients, to the increasing use of new, valuable, and expensive drugs, and to the increase in the proportion of proprietary remedies, now accounting for 25% of prescriptions and in money for about half the whole drug bill. He intended to notify doctors in a month or so of the two schedules laid down by the Cohen Committee which referred to drugs of no proved therapeutic value. The Government had decided to inquire into the cost of certain proprietaries which seemed to be specially expensive. Mr. Macleod was critical of firms "who are merely wrapping up standard preparations in pretty packages and forcing them on the notice of doctors by salesmanship." The pharmaceutical industry was producing about one-third of its product for export, one-

third for the N.H.S., and roughly one-third went over the pharmacist's counter without prescription. It may be noted that Mr. Macleod paid a deserved tribute to the research done by some of the firms which had to be paid for by their proprietaries. On the effect of charges Mr. Macleod gave some interesting figures which showed that dental charges had had the effect of increasing the services given to schoolchildren. But it seems that he has set his face against further charges, saying, "The difficulty about a policy of successive charges is that in time it must destroy the Health Service." Towards the end of his speech Mr. Macleod said: "What we want to achieve is a system whereby the Service itself has an interest in economy which is as natural and rewarding as is its interest in medical efficiency. That is the essence of the problem which the Guillebaud Committee are trying to solve."

The terms of reference of the Guillebaud Committee are so wide that they do not exclude any approach to the numerous problems that beset the N.H.S.; so wide, in fact, that the Committee's investigation could amount to that of a Royal Commission, which Colonel Stoddart-Scott advocated subsequently in the debate. But it seems certain that the Committee will look closely into the question of block grants to hospital authorities—a subject referred to in a previous leading article[1]—into the needs of certain hospitals, especially mental institutions, for staff, and particularly into the cost of the pharmaceutical service. It looks as if the pharmaceutical industry will be subjected to a searching inquiry—an inquiry which may be extended to the prescribing habits of the medical profession. We suggested some twelve years ago that the industry needed some form of rationalization,[2] but the medical profession is deeply sensible of the great contributions made to pharmacology by a large part of the pharmaceutical industry, apart from its indispensable services in the manufacture and distribution of drugs. Mr. Bevan would of course blame general practitioners for the rising cost of the pharmaceutical service; that is the sort of thing we have come to expect from him, and he does not disappoint us. But much of the trouble is due to the fact that many patients equate a free Health Service with an abundant supply of free pills and potions. Consumer demand is still at full tide. Doctors have done their best to stem this. They will co-operate with the Guillebaud Committee and the Minister of Health in any rational attempt to introduce order where disorder is shown to exist. But the medical profession will at the same time have to watch carefully lest any restriction should be imposed which will prevent or hinder the practitioner from prescribing what he thinks is best for his individual patient. This cannot be dictated to him.

1 *British Medical Journal*, 1953, **1**, 825.
2 Ibid., 1940, **2**, 875.

SEXUAL REPRODUCTION IN VIRUSES

The distinctive feature of sexual reproduction in general was formerly considered to be a fusion of different types of gamete. Now it is held to consist in meiosis and nuclear fusion. The presence of sexually differentiated organs or cells is not of the first importance: the primary significance of sex lies in the opportunity it provides for genetic recombination—that is, for fresh combinations of genes. Hence any organism having mechanisms for genetic recombination between different individuals may be said to show sexual reproduction. This is the basis for the claim that sexual reproduction occurs in viruses.

In 1946 Delbrück and Bailey[1] and Hershey[2] observed genetic recombination in the type of virus known as bacteriophage—that is, new strains showed mixtures of characters from two parental strains. Since this discovery the evidence for a hereditary mechanism in viruses, in several respects like the chromosome mechanism of higher forms of life, has been greatly strengthened. Luria[3] had previously demonstrated that viruses undergo mutation, and Hershey[2] showed that different mutations occurred independently at different genetic loci. Subsequently, Hershey and Rotman[4 5] demonstrated partial linkage of certain phage characters. Moreover, the linkage data fitted a linear map, suggesting that certain genes in phage are disposed in a line, and that there was an interchange of genes comparable to the crossing-over that occurs between homologous chromosomes during meiosis in higher organisms. Later Hershey and Davidson[6] established in one instance the existence of multiple alleles. Furthermore, Hershey and Chase,[7] in a study of plaque formation by bacteria, have demonstrated that heterozygous phage particles are often produced when bacteria are infected with two virus strains differing in plaque formation.

Despite this apparently normal hereditary mechanism in viruses, there is other evidence

1 *Cold Spr. Harb. Symp. quant. Biol.*, 1946, **11**, 33.
2 Ibid., 1946, **11**, 67.
3 *Genetics*, 1945, **30**, 84.
4 *Proc. nat. Acad. Sci. (Wash.)*, 1948, **34**, 89.
5 *Genetics*, 1949, **34**, 44.
6 Ibid., 1951, **36**, 667.
7 *Cold Spr. Harb. quant. Biol.*, 1951, **16**, 471.
8 *Proc. nat. Acad. Sci. (Wash.)*, 1947, **33**, 253.
9 *Science*, 1950, **111**, 507.
10 Dulbecco, R., *J. Bact.*, 1952, **63**, 209.
11 *Cold Spr. Harb. Symp. quant. Biol.*, 1951, **16**, 463.
12 *J. gen. Microbiol.*, 1951, **5**, 67.
13 *Nature (Lond.)*, 1953, **171**, 163.
14 *Aust. J. exp. Biol. med. Sci.*, 1952, **30**, 447, 459, 469.
15 *Schweiz. Z. Path. Bakt.*, 1948, **11**, 395.

which conflicts. First, the heterozygotes observed by Hershey and Chase[7] have some puzzling features: most appear to be heterozygous at only one locus, even when parental strains differ at two loci. This suggests that the heterozygotes may not be diploid, but rather haploid with the addition of one or more extra pieces of genetic material. Secondly, viruses seem to differ from other organisms in their method of multiplication. There is no evidence, from electron microscope studies or elsewhere, that virus reproduction is by binary fission. Furthermore, the finding that viruses cannot be re-isolated from host tissue for a definite time after inoculation has led to the suggestion that the virus particles break down in the host into a number of smaller units, which are then reduplicated before assembly into new virus particles. If this is in fact how the virus multiplies, then there would be abundant opportunities for recombination during mixed infections of the host. Indeed Luria,[8 9] in order to account for certain effects of phage on bacteria, put forward a hypothesis that genes multiply independently and subsequently reassemble into virus particles. However, it now appears[10] that an alternative explanation for these effects is necessary. Nevertheless, the hypothesis will explain genetic recombination in viruses. Indeed, several observations support the hypothesis that reproduction of the genetic material of viruses takes place mainly by reduplication of elements that are not yet in the form of mature virus particles, and that recombination occurs late in reproduction of the genetic material. Thus, Luria[11] has shown that gene reproduction in phage is exponential—that is, one gene produces x genes, each of which then produces x genes, and so on. The initial genes, brought in by the infecting virus, give rise to copies which are themselves copied, giving a clonal distribution of any mutants which may have appeared. This is in contrast to the nearly random distribution of recombinants from mixed infections.

Whatever the nature of the hereditary mechanism in viruses, it is certain that genetic interaction occurs between different strains. This is a finding of great significance, for it means that new and more virulent strains may arise whenever a host is infected by more than one strain of virus. Burnet and his colleagues Lind and Fraser found[12 13 14] that recombination occurred when mixed strains of influenza virus were inoculated into mouse brain and chick embryo, and it seems possible that genetic interaction always follows infection with two or more strains of virus. This undoubtedly supports the suggestion made by Pontecorvo[15] in 1948 that virulent influenza epidemics may arise by the simultaneous double infection of hosts by two non-virulent forms.

SURPLUS REGISTRARS

The statement of agreement reached between the Minister of Health and the Joint Consultants Committee on the subject of surplus senior registrars in England and Wales which appears in this week's *Supplement* (page 243) is good news. It is the outcome of considerable pressure upon an adamant—albeit sympathetic—Ministry by the Joint Consultants Committee ably backed up by the registrars. In fact, the measures now proposed are largely those of the Registrars Group of the B.M.A.

The Minister has authorized hospital boards to retain senior registrar posts in excess of the establishment laid down in 1951[1] for a period not beyond 1955 in cases where the retention will avoid extra staff having to be employed in other grades, and provided suitable candidates are forthcoming. Posts which are to be retained will be advertised as they become vacant. The present holders, other senior registrars whose appointments are nearly at an end, and, in certain circumstances, former senior registrars will be able to apply. The term of appointment will be for one year, but boards will be able to extend it to a second year where other employment has not been obtained by the end of the first year. Holders of these posts will still be free to compete for higher appointments, but they will do so without priority and on equal terms with other candidates. In addition to the opportunity of applying in open competition for a post which he has just vacated, there will be nothing to prevent a senior registrar from applying as at present for any other post within the training establishment. These proposals are fair, and bring to an end a long period of anxiety and uncertainty. They allow for open competition, which will be good for the hospital service, and those who lose may do so with grace and without bitterness against the politicians. Too long has the registrar establishment and the hospital service to which it belongs been the victim of *ad hoc* decisions based on political expediency. A crisis of unemployment among future consultants and a staff shortage in hospitals have been averted. The time gained should be devoted to some creative thinking undisturbed by political clamour so that eventually some order may be created out of the muddle which at present clouds the hospital service.

MUSCLE FIBRILLATION

Traditionally muscle fibrillation[2] has been the term used for involuntary contraction of groups of muscle fibres without actual movements of the limb, a phenomenon seen most often in patients with motor neurone disease. In 1938 Denny-Brown and Pennybacker[3] suggested that fasciculation would be a preferable term, since contraction of a group of muscle fibres supplied by a single motor unit causes the involuntary contraction. The term fibrillation, they suggested, should be used for the involuntary contraction of single muscle fibres which occurs in denervated muscle and which gives a characteristic record on the electromyogram. This dener-

[1] *British Medical Journal Supplement*, 1951, **2**, 47.

vation fibrillation cannot be seen through the skin, and in man the only place where it can sometimes be seen is the tongue after a lesion of the hypoglossal nerve or nucleus. Since then the two terms have been used somewhat indiscriminately, traditionists favouring fibrillation, purists fasciculation, in spite of the fact that the involuntary movement does not involve a whole muscle fascicle but only the fibres innervated by one anterior horn cell.

Clinically the most frequent cause of muscle fibrillation is chronic disease affecting the spinal anterior horn cells, of which the various types of motor neurone disease are the most common, but it may also be seen in syringomyelia and with spinal compression at the level of the compression. It may occur in acute disease affecting the anterior horn cells, as in the pre-paralytic stage of anterior poliomyelitis.[4] Then the muscles showing extensive fibrillation are likely to be involved by paralysis within the succeeding twenty-four hours, but fibrillation does not indicate whether the muscle weakness will be slight or severe. Fibrillation may occasionally occur in diseases of the lower motor neurone with no definite pathological evidence of anterior horn cell involvement, such as polyneuritis,[5] peroneal muscular atrophy, and thyrotoxic myopathy.[6] But it must be emphasized that muscle fibrillation may occur without any disease of the central nervous system or of the muscles, and long-continued fibrillation in the absence of muscle wasting or weakness is usually a trivial disorder. But when it afflicts doctors it not unnaturally may cause considerable anxiety about its possible significance,[7] and this may in itself aggravate the fibrillation.

The pathology of fibrillation is of interest. Its occurrence most frequently in chronic disease of spinal anterior horn cells suggested that it was due to some disturbance in these cells, but the old observation[8] that physostigmine or its analogue neostigmine, which act predominantly at the myoneural junction, may cause intense fibrillation, was in favour of a more peripheral mechanism; and this theory was supported by its occasional appearance without disease of the anterior horn cells. Forster and his colleagues[9 10] have demonstrated that it can occur when impulses from the anterior horn cells to the muscles are interrupted either by spinal analgesia or by injection of procaine into the common peroneal nerve with resultant muscle paralysis. As a final demonstration they divided the left axillary nerve in one patient with severe amyotrophic lateral sclerosis and the femoral nerve in another, and found that fibrillation persisted for about seven days after nerve section. They thus conclusively proved that conduction of impulses from the anterior horn cell to the muscle was not necessary in the production of muscle fibrillation, which they suggested originated at the myoneural junction. These experiments show without a doubt that the source of muscle fibrillation is peripheral, and it is not at present clear why it should be such a conspicuous sign in certain disorders affecting the spinal anterior horn cells.

2 Gowers, W. R., *Diseases of the Nervous System*, 2nd ed. London: J. and A. Churchill. 1892.
3 *Brain*, 1938, **61**, 311.
4 Russell, W. R. *Poliomyelitis*. London: Edward Arnold, 1952.
5 Worster-Drought, C., and Sargent, F., *Brain*, 1952, **75**, 595.
6 McEachern, D., and Ross, W. D., ibid., 1942, **65**, 181.
7 Schwab, R. S., *et al.*, *British Medical Journal*, 1951, **2**, 209.
8 Langley, J. N., and Keto, T., *J. Physiol. (Lond.)*, 1915, **49**, 410.
9 *Arch. Neurol. Psychiat. (Chicago)*, 1944, **51**, 264.
10 Ibid., 1946, **56**, 277.

AN UNWISE RISK

In sending samples of drugs through the post manufacturers and distributors normally exercise the care expected of them. Some of these medicaments are toxic, especially to children, but they are usually well packed up. An exception to the rule has been brought to our notice by a correspondent, to whom samples of a new hypnotic were recently delivered by post. A small box with a transparent top and bottom containing four exceptionally brightly coloured capsules was sent to him unsolicited in an unsealed, unregistered envelope. He found it on the doormat together with an identical package addressed to a doctor who had inhabited the house some time previously. While the preparation is not a scheduled poison and can be bought over the counter by the public, it nevertheless deserves to be treated with greater respect than that. A suicidal death has been reported[1] in the U.S.A. from taking the drug (there given a different name). Certainly a gross overdose was then taken—about 12 times the recommended dose. But quite a small quantity of any such drug may constitute a fatal dose to a child aged 1 to 2 years, which is the age when the chance of dying from accidental poisoning is exceptionally high. Nor must the dispatch of these samples only to doctors' addresses be thought a sufficient safeguard, for the addresses are often out of date—as indeed in the case reported to us. Pharmaceutical firms should surely consider it a duty to seal securely the packages of potentially dangerous drugs that they send through the post, for the danger to children of medicaments that are relatively non-toxic to adults should not be overlooked.

ADOPTION

Social legislation places high in its scale of values the rights of children to a normal home life, and the practice of adoption is one of the ways by which these rights are secured. We are told in *The Golden Bough* that when Hera adopted Hercules she went through the ritual of a mock confinement, and that similar rites were in fact practised not long ago among primitive peoples when a child was "adopted." Less picturesque but doubtless safer and more orderly procedures are now laid down by the law. In this country legislation was at first resisted, for it was said that legalized adoption would encourage illegitimacy and child neglect. However, unsupervised and unregulated adoption, often associated with baby-farming, was recognized as the greater evil, with the result that after cautious deliberation and the presentation of a series of reports to Parliament the first Adoption Act was passed in 1926. The great increase in the numbers of illegitimate children and orphans during the first world war pointed

1 Cares, R. M., *et al.*, *Amer. J. clin. Path.*, 1953, **23**, 129.

the need for official action. The more recent Acts, the last of which was passed in 1950, reflect the pressure of increasing numbers of adoptions during and after the second world war. In England legal adoptions rose from 2,967 in 1927 to 21,280 in 1946, the peak year so far, for numbers have tended to fall since then.[1]

Earlier this year the Home Secretary appointed an interdepartmental committee, under the chairmanship of Sir Gerald Hurst, to consider the present laws relating to the adoption of children, and in the *Supplement* this week (p. 240) we print the memorandum of evidence which will be submitted by the Council of the B.M.A. to the committee. The views of medical men and women on this question will be received with attention, for they are in a better position than most to assess the success or otherwise of adoptions. Some of the adoption societies forbid official inquiries to be made about how an adoption is working out once the adoption order has been made, and many of the social workers employed by the courts and local authorities tend to see only the unsatisfactory results. Health visitors, of course, are also in a good position to watch the progress of adopted children, for they can visit them in the ordinary course of their duties.

There is a tendency in official circles to frown on adoptions arranged by individuals (so-called third-party adoptions) as opposed to those arranged by registered adoption societies and local authorities, but the Council of the B.M.A., while admitting there is a greater risk of failure with third-party adoptions, comes out firmly in favour of preserving this method, provided safeguards are introduced. Such safeguards should include notification to the local authority and full investigation before the placing of the child with the proposed adopters. The mother also should be under an obligation to make a request to the local authority for permission to place the child for adoption. Another recommendation contained in the memorandum of evidence is that child adoption should be controlled by the Ministry of Health rather than the Home Office, and, further, that the health committee of a local health authority should delegate to a special adoption subcommittee the responsibility of investigating cases. This of course raises the thorny question of the responsibility of the health committee *vis-à-vis* the children's committee of the local authority, and on this point the memorandum of evidence states, "It is realized that active co-operation with the local children's committee would still be essential." Another interesting recommendation is that the proposed adopters of a child should be medically examined by their family doctor, who should also give to a medical referee appointed for the purpose an opinion on their personality, probable adaptability to family life, and reasonable expectation of survival. This proposal may lead to some controversy, but it is both sensible and practicable. A final point of some importance is that a child attending the juvenile court for the purposes of the Adoption Act should not have to mix with those attending the court for other reasons.

[1] *Adoption Trends in England and Wales.* A report of the Standing Conference of Societies Registered for Adoption.

CULDOSCOPY AND CULDOTOMY

In gynaecology, as in other fields of medicine, a carefully taken history is a first step to diagnosis, but the evaluation of the presenting symptoms may be difficult, and bimanual pelvic examination, even under anaesthesia, is not without its limitations. If there is no response to simple treatment, or if the diagnosis remains in doubt, laparotomy may be undertaken, particularly when pelvic pain persists or the possibility of an ectopic pregnancy cannot otherwise be excluded. Operation may reveal unsuspected disease or a more extensive lesion than was expected, but on the other hand no abnormality may be found. In the latter case, although the opportunity may be taken to carry out ventrosuspension of the uterus or to remove the appendix, the surgeon might well wish there were lesser procedures available whereby the uterus and appendages might be inspected. In fact, gynaecologists have performed coelioscopy by two different routes. Transabdominal peritoneoscopy, introduced by Kelling in 1902, was developed by Ruddock,[1] and Palmer,[2] in France, still champions its use in the study of sterility, especially in assessing whether salpingostomy is likely to be successful. In 1944 Decker and Cherry[3] described the use of a special endoscope for introduction through the posterior vaginal fornix into the pouch of Douglas (cul-de-sac in American terminology), and gave the name culdoscopy to the inspection of the pelvic contents by this route. In a monograph[4] reviewed in this *Journal*[5] a few months ago Decker showed that if the operation is performed with the patient in the knee–elbow position the difficulties and dangers, the chief of which is perforation of the rectum, can be avoided. He found culdoscopy particularly useful in the diagnosis of endometriosis and ectopic pregnancy and in the study of infertility, and he pointed out its value for research into tubal and ovarian function.

More recently Doyle[6] has extended this procedure into one of "exploratory culdotomy," which gynaecologists will appreciate is none other than posterior colpotomy in a new guise. After palpating the pelvic organs through the peritoneal opening, a magnifying "pelviscope" is introduced and the pelvic contents are inspected. The telescope can be removed, leaving a retractor in place through which adhesions may be cut or biopsy sections taken. According to Doyle the main indications for culdotomy are to find the cause of pelvic pain, to diagnose endometriosis, ectopic pregnancy, and ovarian neoplasms, and to study the uterus and appendages in cases of sterility. In all these cases palpation and observation through the pouch of Douglas constitute an alternative to laparotomy and may demonstrate that the major procedure is unnecessary. In contrast to Decker, whose claims are moderate, Doyle might be thought to have overstated his case. Certainly his advocacy of denervation of the uterosacral ligaments by transection for the relief of pelvic pain in dysmenor-

[1] Ruddock, J. C., *Surg. Gynec. Obstet.*, 1937, **65**, 623.
[2] Palmer, R., and Palmer, E., *La Stérilité Involontaire*. Paris: Masson et Cie. 1950.
[3] Decker, A., and Cherry, T. H., *Amer. J. Surg.*, 1944, **64**, 40.
[4] —— *Culdoscopy*. Philadelphia and London: W. B. Saunders. 1952.
[5] *British Medical Journal*, 1952, **2**, 1030.
[6] Doyle, J. B., *J. Amer. med. Ass.*, 1953, **151**, 605.

rhoea and dyspareunia will be challenged. Nevertheless culdoscopy, experience of which is apparently so far slight in Britain, may have something to offer the gynaecologist both in practice and in research.

THE DUTIES OF A NURSE

In the debate on the nursing services in the House of Lords last week (see p. 1172) several speakers referred to the technical work which in some hospitals was apparently thought to be within the range of duties of student nurses. Lord Amulree, for instance, thought there was a danger of getting too many nurses too highly trained, so that they would become not very good doctors instead of good nurses. The council of the Royal College of Nursing is also worried about a possible confusion between the functions of nurses and doctors, and has recently sent a memorandum to governing bodies and regional hospital boards. This draws attention to the increasing tendency for nurses, particularly in hospitals, to carry out duties which do not lie within their field of training—for instance, the giving of intravenous injections and the withdrawal of blood from veins. This may expose the nurse to the risk of charges of professional negligence, though in the opinion of the Royal College of Nursing the responsibility is the doctor's. "The only professional negligence for which the nurse should be held liable should be failure in regard to nursing procedures." Another matter of concern to the College is the practice in some hospitals of leaving it to a nurse to explain to the patient "the nature and effect of the operation" when obtaining the patient's signature on the revised form of consent. Although nurses can properly undertake part of this routine work the College believes that the doctor must at all times retain full responsibility, and should enter the type of operation on the form himself, explain it to the patient, and obtain his signature.

The performance of duties outside her professional scope also makes inroads into the time which a nurse should spend in the nursing care of the patient. Though younger nurses are often enthusiastic to undertake technical procedures, the College maintains that senior members of the profession realize the possible disadvantages and believe that a trained nurse in hospital should have more than enough to do in teaching, caring for her patients, and administering her department. Although the General Nursing Council does not control a nurse's actions when she is trained, it would deprecate the delegation of extraneous duties to ward sisters and staff nurses in nurse-training schools. Busy ward sisters, when asked by the Working Party[1] appointed to inquire into these matters whether they would welcome extra technical responsibilities if pressure of work were lessened and the element of risk removed, replied that this temptation should be resisted on account of the loss of time which they should be giving to their nursing duties.

These doubts and difficulties of the nursing profession will have to be carefully considered by the medical profession, and it will be interesting to hear the reaction of the hospitals to the Royal College of Nursing's memorandum.

[1] *The Recruitment and Training of Nurses*, 1947, H.M.S.O., London.

ENDEMIC SYPHILIS

Endemic syphilis, which has been present in Bosnia since, and perhaps even before, the sixteenth century, is not usually acquired venereally, affects children mainly, is particularly prevalent where standards of living are low and social and economic conditions poor, and is found in rural rather than urban communities. Clinically and pathologically it differs in no important respects from sporadic venereal syphilis; though primary lesions are rare, secondary ones and gummata are common. Contrary to what has been stated, neuro- and cardiovascular syphilis do occur, though not often. Congenital syphilis is very rare, and this is explained by the fact that infection usually takes place in childhood, and by the time the patients reach adult age they are no longer likely to transmit the disease. But this is probably not the whole explanation, since it is not uncommon for a mother to be infected by her child when suckling. Efforts to eradicate endemic syphilis from Bosnia were made in 1905–11 and again in 1926–33, but they had little success. In 1948[1,2] an organized campaign was started under the aegis of W.H.O. The objects were to examine, both clinically and serologically, the whole population and treat compulsorily all infected persons and their contacts, to improve standards of hygiene, and to repeat the surveys at appropriate intervals. Serum was tested by the Kahn and Meinicke reactions, and the only drug used for treatment was procaine penicillin G in oil with 2% aluminium monostearate (P.A.M.). The usual dosage was 3.6 to 4.2 mega units spread over six to twelve days, and 1.2 mega units as abortive treatment for contacts. In the first survey 85% of the population was examined, and this figure rose to 95% at the second survey. The people proved co-operative. Complete eradication of the disease should be possible, but the difficulty in achieving this is due to a few infected persons remaining untreated, to the entry into the area of infected persons from outside, and to symptomless cases in the incubation period being missed. Infectious relapse is considered to be rare. Repeat surveys should in time reduce the reservoirs of infection to negligible proportions. Animal experiments and penicillin sensitivity tests showed that spirochaetes obtained from cases of Bosnian endemic syphilis differ little from those found in venereal syphilis acquired elsewhere.

Theoretically there seems no reason why any treponemal disease in any part of the world should not be eradicated by mass treatment, provided the campaigns are carefully followed up. In fact such treatment has already had great success in the treatment of yaws in Haiti, Indonesia, Thailand, and the Philippines, and in the treatment of bejel in Iraq.[3] The value of the follow-up is shown by the results of treating yaws in Sierra Leone, where between 1941 and 1946 mass treatment alone reduced the infection rate from 13.7 to 5.8, mass treatment plus permanent treatment facilities to 1.3, and both those plus home visits to 0.

[1] Grin, E. I., Turner, T. B., and Hollander, D. H., *Bull. World Hlth Org.* 1952, **1**, 1.
[2] Grin, E. I., *Epidemiology and Control of Endemic Syphilis*, 1953, Geneva.
[3] Guthe, T., Reynolds, F. W., Krag, P., and Willcox, R. R., *British Medical Journal*, 1953, **1**, 594.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

APOPLEXY

BY

F. J. NATTRASS, M.D., F.R.C.P.

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The term "apoplexy" is a very general one meaning a sudden severe cerebral illness of vascular origin, and as such is a common emergency of general practice. The disaster may be due to haemorrhage ploughing up brain substance or flooding the subarachnoid space or to extensive softening resulting from arterial obstruction. Of the latter the chief causes are thrombosis and embolism, but in some fatal cases no actual block can be demonstrated, and it is probable that vascular spasm has been responsible for the damage. Limited softenings causing local or general disturbances of brain function of a more insidious character are not included under the term apoplexy. Recognition of the nature of an apoplectic seizure is important from the point of view of prognosis and increasingly so from the point of view of treatment.

Generally speaking there are clear pathological and clinical differences between intracerebral and subarachnoid haemorrhage, but the distinction is far from absolute. Blood from a primary intracerebral haemorrhage often reaches the subarachnoid space from the ventricles; and haemorrhage from a surface vessel may produce its chief effects by destroying cerebral tissue.

Intracerebral Haemorrhage

The underlying pathological cause in the great majority of cases of intracerebral haemorrhage is atherosclerosis accompanied by hypertension. There is little evidence clinically of sudden increase of tension, and it is not clearly known why the arteries, so long under strain, suddenly give way. Most of the patients are elderly: exceptions are the subjects of malignant hypertension or chronic nephritis, who may be younger, and patients with aneurysms which rupture into the brain (see below).

Haemorrhage may occur in any part of the cerebral hemisphere or in the pons, rarely elsewhere; much the commonest site is into the internal capsule and the adjacent basal ganglia, an area supplied by the small perforating arteries (lenticulo-striate and lenticulo-optic) arising from the middle cerebral artery.

The accident may occur at a time of physical or emotional strain, but more often there is no known exciting factor. The patient may cry out with pain in the head or may complain of dizziness, but if such symptoms are present they are very brief. Unconsciousness may be immediate or there may be a rapid onset of hemiplegia succeeded in a few minutes by coma. The face is flushed, the breathing noisy, sweating copious, the pulse usually slow and tense; at the outset there may be vomiting. There is soon incontinence of urine and often of faeces.

Signs of the location of the lesion are often lacking in deep coma, but there may be some signs of hemiplegia. Deviation of the head and eyes may be present and is usually away from the side of the lesion; the pupils dilate as coma deepens, and more on the side of the lesion; but these indications of laterality are unreliable. Paralysis of the limbs on one side may be revealed by their greater flaccidity and by their falling more heavily when released. An extensor plantar response accompanies other signs of hemiplegia, but otherwise the plantar reflexes do not help in comatose patients. In pontine haemorrhage it is characteristic to find pin-point pupils and high fever from the onset.

Differential Diagnosis

If the whole story is known this clinical picture is almost diagnostic of a severe intracranial vascular lesion. Lumbar puncture should be performed. A small amount of blood is very commonly present from a primary intracerebral haemorrhage, and if this is accompanied by the clinical picture described the diagnosis is established and recovery virtually excluded. If the cerebrospinal fluid is clear other possibilities have to be considered. Capsular haemorrhage of lesser degree may be followed by recovery, as is known from pathological studies revealing the results of old haemorrhage, but clinically is not distinguishable with certainty from softening. Other causes of coma require consideration if the mode of onset is unknown, but are not usually difficult to distinguish. A patient suffering from head injury shows signs of shock rather than stertorous coma, or, if shock is not profound, restlessness and resistance—these apart from direct signs of injury. After an epileptic seizure the patient is often stuporous, but the problem is soon resolved by recovery of consciousness or recurrence of fits.

Persons suffering from narcotic poisoning are usually cold, with depressed respirations, the skin dry or lightly sweating; the state of the pupils may help in opium or belladonna poisoning, though not in the barbiturate poisoning so common to-day. There is usually clear circumstantial evidence. The comatose diabetic is flushed, with distinctive sighing respirations, and has abundance of acetone in the breath and urine, and sugar in the latter. Spontaneous hypoglycaemic coma is rare and paroxysmal: the latter is true of the much commoner hypoglycaemia occurring in a known diabetic under insulin treatment. Terminal uraemia may resemble cerebral haemorrhage, but is not likely to present primarily as unexplained coma, and the evidence of chronic nephritis and a high blood urea is decisive.

Patients with malignant hypertension are liable to attacks associated with sudden elevation of the blood pressure and cerebral symptoms (hypertensive encephalopathy), but the appearances are rather those of status epilepticus than of apoplexy, and the retinal and other signs of this disease are present.

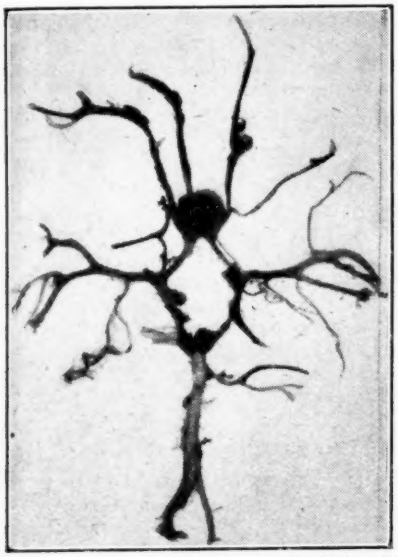
Subarachnoid Haemorrhage

Symonds in 1924 reviewed 124 published cases of subarachnoid haemorrhage and showed clearly for the first time that the rupture of an intracranial aneurysm is by far the commonest cause of this form of apoplexy. Later authors have estimated the percentage due to this cause at 70 to 80. Of the remainder it is now recognized that most are due to bleeding from arteriovenous angiomas or other vascular malformations. Subarachnoid haemorrhage is common, possibly not much less frequent than primary intracerebral haemorrhage.

These aneurysms are formed by a bulging of the outer and inner coats of an artery through a developmental defect in the muscular and elastic wall. Such a defect is common in arteries, cerebral and other, without aneurysm formation, and there is little doubt that further factors involved are arterial degeneration and the strain of increasing blood pressure. This view is borne out by the age incidence. Developmental defect alone probably accounts for the occasional cases of rupture in childhood, and the condition is relatively common in early adult life, but the maximum incidence is between 40 and 60 years, little lower than that of intracerebral haemorrhage.

The majority of these aneurysms are situated on the anterior part of the circle of Willis and the vessels arising therefrom (see Figure), and receive their blood supply from the internal carotid artery; a small percentage occur further back on vessels derived from the basilar artery.

Physical strain as an immediate exciting factor is commoner in subarachnoid than in capsular haemorrhage; nevertheless, any such factor is absent in most cases. Sudden intense pain in the head is also a much more constant and dramatic initial symptom: it may be masked by almost immediate unconsciousness, but more often impairment of consciousness is less complete than in the intracerebral form, and the headache may be accompanied only by giddiness and confusion, and often by vomiting. In the severest cases coma deepens and death follows in a few hours. Most patients make a partial recovery from the initial collapse, but continue to complain of severe headache, now tending to be occipital, and remain confused and restless. Within a few hours such a patient presents a picture of meningitis, due of course not to infection but to severe meningeal irritation by effused blood and the reaction aroused thereby. He lies curled up and resistant, groaning with pain, with neck stiffness and Kernig's sign, and the picture is completed by moderate fever. Lumbar puncture reveals a diffusely blood-stained fluid. On standing, the blood does not clot and the supernatant fluid is yellow; this xanthochromic change is not immediate but is usually present within four hours of the onset.



Aneurysm on anterior part of circle of Willis. Reproduced from *A Textbook of Medicine*, edited by E. Noble Chamberlain, by permission of Messrs. John Wright and Sons.

Such is the typical picture, but it may be modified, particularly by two factors—the rate of rupture and the situation of the aneurysm. Occasionally the onset of headache is gradual, or there may be intermittent occipital and back pains suggesting small leaks before the ultimate apoplexy. Paralysis of ocular muscles, especially of those supplied by the third nerve, may appear shortly after rupture of an aneurysm situated on or near the internal carotid artery. Local signs of brain injury may result from rupture of an aneurysm on the middle or anterior cerebral artery beyond the circle of Willis; the finding of a hemiplegia following a subarachnoid haemorrhage, which may not itself have been extensive, is strongly suggestive of the intracerebral rupture of an aneurysm, for the bursting of a primary intracerebral haemorrhage into the subarachnoid space is incompatible with recovery from coma.

Prognosis of Subarachnoid Haemorrhage

The outlook in subarachnoid haemorrhage is much less grave than in the primary intracerebral form, but the immediate mortality rate has hitherto been about 45%. Of the patients who die, about a third do so in the first 24 hours, and a further considerable proportion during the next 14 days. Great importance therefore attaches to the possibilities of surgical treatment, for the basis of these cases is a local anomaly rather than a general arterial disease. Surgical treatment depends upon demonstration of the site of the aneurysm by arteriography; this is not always possible, and when it is possible surgical treatment is by no means always applicable. In a group of 70 cases treated by Falconer during or soon after haemorrhage the mortality rate was 17%: allowing for some probable selection of cases, this is still very impressive when compared with conservative treatment. What seems to emerge clearly is that a decision on surgical treatment is required early, not longer than a few days after the initial bleeding, as the chief role of surgery seems to be the prevention of early recurrence. The decision on method—carotid ligation and/or some form of intracranial operation—is a highly individual problem.

The matter of late prognosis is also of great importance. What happens to the 50% or more who survive an attack of subarachnoid haemorrhage even under purely conservative treatment? The most recent and largest follow-up (from 1 to 12 years later) is reported by Walton (*British Medical Journal*, 1952, **2**, 802), and it shows that fatal recurrence of bleeding occurred in 20.6%, but that almost half of these recurrences took place within the first six months. Of 120 surviving patients 115 were able to pursue some useful activity, although 49 were moderately disabled. The causes of disablement include headaches, paralysis, and epilepsy, but the greatest cause is anxiety due to fear of recurrence. Walton emphasizes that after six months the patient should be encouraged to live a perfectly normal life and to do heavy work and play games if he so desires: to warn him against these things is to create anxiety without any evidence that recurrence will be prevented. With this view I am in full agreement.

Cerebral Thrombosis

Cerebral thrombosis is commoner than haemorrhage. The clinical picture of thrombosis is also much more varied; often the lesions are limited and the effects fall short of the major disturbances usually described as apoplexy. Sudden occlusion of the main trunk of the middle cerebral artery may cause loss of consciousness with appearances and course indistinguishable from those of cerebral haemorrhage. More often paralysis comes on quietly and painlessly without loss of consciousness, or is found on waking from sleep. Occasionally indications arise first of involvement of branches of the cortical division: thus an aphasia of motor or sensory type may occur first, or attacks of Jacksonian epilepsy, to be followed in the course of a few hours or days by hemiplegia as the thrombosis spreads to the main trunk. The paralysis is more severe in the arm than in the leg, since the leg area of the cortex has an additional blood supply from the anterior cerebral artery.

Cerebral thrombosis has a much lower immediate mortality than haemorrhage. Repeated strokes are due to thrombosis—or possibly to arterial spasm—and a final stroke is often due to haemorrhage into a softened area. There is always this danger of sudden termination, but most patients survive and are left with paralysis of varying degree. As is well known, a proportion of such patients recover completely.

While, as in cerebral haemorrhage, the middle cerebral is the artery most commonly involved, major disturbances of apoplectic type may arise from occlusion of other vessels. The picture of anterior cerebral thrombosis may be distinguishable by the character of the hemiplegia, which affects the leg more than the arm, and by the presence of sensory loss of cortical type. Occlusion of the posterior cerebral artery seems mostly to arise insidiously: its main manifestation is partial or complete blindness on the opposite side, but it may be accompanied by transient paralysis or aphasia. Sudden softening of the brain stem gives varied and alarming symptoms, including paralysis of speech and deglutition, and intense vertigo from involvement of labyrinthine and cerebellar fibres; nevertheless, recovery is often satisfactory.

Cerebral Embolism

These cases are not usually difficult to recognize, as the source of an embolus is apparent in the heart. Mitral stenosis, especially with auricular fibrillation, is the common lesion. Subacute bacterial endocarditis may give rise to embolism causing either an uncomplicated hemiplegia or a mycotic aneurysm of which the first manifestation is a subarachnoid haemorrhage. Detachment of intramural clot following myocardial infarction is an occasional cause of cerebral embolism.

The main clinical feature suggesting embolism is the absolutely sudden onset without premonitory symptoms. As with thrombosis, consciousness is retained unless the occlusion is unusually large; if unconsciousness occurs the prognosis is correspondingly grave.

General Treatment

The aim in comatose patients is to maintain the best conditions for possible recovery. To this end care of the skin endangered by pressure, by soaking with urine, or by burning with hot bottles is important. Special care should be taken to see that apparent incontinence is not retention with overflow; if this is the case catheterization may be needed, with prophylactic sulphonamide. Most patients recover consciousness or die before nutrition becomes a problem. In subarachnoid haemorrhage, the intense headache calls for morphine with such frequency as is judged necessary; as the often protracted illness proceeds, milder analgesics should be substituted. It is justifiable to repeat lumbar puncture if pain is unusually persistent, but it does not always give relief. Rest in bed for several weeks is indicated after a haemorrhage.

While it is of little use moving helpless patients from bed to chair, it is a mistake to keep patients with cerebral thrombosis in bed for any longer than is necessary. It is most important that from the earliest days simple and full passive movements of all parts of the paralysed limbs are made, and unless instruction to do this several times daily is given to the relatives painful contractures develop which greatly impede restoration of function.

Next Refresher Course Article.—"Treatment of Accidental Poisoning," by Professor John Glaister.

The birth of a new kind of chemistry is heralded by Professor C. D. Darlington, F.R.S., in a special supplement to *Heredity*, 1953, volume 6, which records a symposium on chromosome breakage held at the John Innes Horticultural Institution last year. The breakage of chromosomes is of outstanding interest to biologists, because it is a nuclear change that can be studied microscopically and in relation to its effects on the organism. Its causes can also be subjected to experimental investigation. These include various chemical treatments and ionizing radiations, of which latter, as Professor Darlington says, "atomic radiation is in some danger of becoming the most important." He goes on to say that chromosome breakage "is the most effective experimental agent of the death of cells. It is therefore the chief means of cancer treatment. It is also, as a spontaneous event, characteristic of many types of tumour development. Jointly with gene mutation, it is, although we are still only beginning to understand their connexion, the agent of all genetic and evolutionary change." The new kind of chemistry he sees is one in which the actions of very large molecules in the cell—the nuclear structures—can be observed directly by means of a microscope. This symposium contains 23 papers on many different aspects of the experimental and natural breakage of chromosomes. It is published by Oliver and Boyd (45s.).

Reports of Societies

LABORATORY FACILITIES FOR THE GENERAL PRACTITIONER

A joint meeting of the Sections of Pathology and General Practice of the Manchester Medical Society discussed "Pathological Facilities for the General Practitioner" on May 13.

Dr. F. B. SMITH (Kendal), in opening the discussion, said that a service in clinical pathology should be available to the family doctor. The general practitioner was the first person on call to the sick, and he had a clear right to the assistance of those of his colleagues who could help him with techniques beyond his own compass. Dr. Smith said that he had practised clinical pathology for more than thirty years in departments that had also served family doctors, almost entirely in combined urban and rural areas. Family doctors had provided 15 to 20% of his work, which was rather less than he had expected, but they had valued the service and did not wish to be without it. A proper co-operation of pathologist and family doctor could reduce the pressure on both other services and bed-space provided by hospitals. But, to be effective, the pathologist must have had a sound training in clinical medicine; he must keep in constant contact with family doctors, and must maintain close touch with current advances in pathology. This would reduce abuse of the facilities offered.

The Advantages

Dr. MILES PARKES (Crewe) spoke from the point of view of the general practitioner who accepts ultimate responsibility for the patient. The medical student was trained to use laboratory facilities, but if he was denied these when he entered general practice he became a mere signpost to the nearest overloaded out-patient department. The cases with which the general practitioner needed the pathologist's help could be grouped together as those which for the safety of all must be nursed in hospital—typhoid, diphtheria, tuberculosis; those which, with a satisfactory domestic situation, could and should be nursed at home, such as septic throats (where with certainty in diagnosis blunderbuss therapeutics could be avoided), intractable diarrhoea and bladder infections, glandular fever and pyrexias of unknown origin; and those cases not yet bedfast which need not encumber hospital out-patient departments—for example, anaemias, disorders of metabolism, etc. Patients requiring treatment with drugs such as the anticoagulants and "butazolidin" could be given domiciliary treatment, granted adequate laboratory control. In the maternity service no woman should approach delivery without her blood state being known.

The provision of laboratory facilities would maintain the interest of general practice and relieve pressure on hospitals, and it would be cheaper than providing more beds. It was said that the facilities would be abused, but the greatest present abuse was the amount of treatment that had to be given as a result of guesswork, brilliant though that guesswork might often be.

Outline of a Service

Professor FRASER BROCKINGTON (Manchester) thought that the chief need was for a direct relationship between the general practitioner and the pathologist. This would allow the fullest development of pathological services consistent with economy. Misuse, which might easily ruin such a scheme, was less likely when the pathologist consulted directly with the general practitioner in the use and interpretation of tests. Properly used, pathology in general practice was bound to effect a saving in hospital accommodation.

The second most important need was for this general-practice pathology to be done in fully equipped and staffed

laboratories. Health centres could with advantage have side rooms, but it was important that any side rooms or health centre units should be attached to and part of the main pathological unit. The exact location of the main laboratory was not of paramount importance, given good transport; it was probably most conveniently sited in the grounds of a hospital.

The third most important need was for unity between public health and clinical pathology. This was of universal application, but from the viewpoint of the general practitioner it had special meaning. An extension of the present tendency to link together the different types of laboratory would help in the development of general-practice pathology along logical lines.

The fourth consideration concerned the mode of contact between general practitioner and pathologist. This should not entail the visiting of patients by the pathologist. Consultation should be at laboratory level, for it was always time-consuming. General-practice pathology would be difficult to develop sufficiently with patient lists of more than 2,000–2,500. The general practitioner who wanted to do research (in which pathological techniques were often indispensable) should have the pathologist readily available for advice and guidance. In short, Professor Fraser Brockington thought that pathology in general practice would raise general practice to higher levels and economize in hospital care, but as a mere technical aid general-practice pathology would not be good. The secret of success lay in securing a direct and personal relationship with the pathologist, who must be regarded in any such scheme as a member of the "home-care team."

The Difficulties

Dr. T. BLENCH (Manchester) said that some of the difficulties now were due to the wide horizons: it was impossible for one person to be completely comprehensive. The general practitioner was the pathologist to the family and had to label the disease. He would like to know when this general pathology became a specialty.

Dr. J. G. O'SULLIVAN (Manchester) was sure that the advice and help of the pathologist were most needed and could best be obtained in the laboratory and not at the bedside. Costs could be kept down by the general practitioner taking the specimens necessary for the required tests, but time and expense could also be saved if specimens could be sent to one laboratory rather than to several laboratories, as might occur now. A simple set of instructions on the methods of collecting specimens for the tests would be most helpful to the general practitioner.

Dr. R. W. FAIRBROTHER (Manchester) said that, while all agreed that a pathological service for the general practitioner should be developed, the need for accuracy in the investigations necessitated a first-class laboratory and personnel. At the present time the laboratory service was grossly inadequate, for there was a shortage of adequately trained pathologists and technicians, of facilities and money for development. These deficiencies could not be remedied easily, for the hospitals also suffered from them besides being affected by the latest "cuts" and having other greater priorities. The hospital pathologist must obviously devote his services primarily to the hospital demands. He thought that the College of General Practitioners should make urgent and repeated demands for this service.

Dr. MILES PARKES (Crewe) said that the most highly organized section of the profession—the general practitioners—was continually presenting the problem to the Minister, who was unfortunately restrained by the financial controls.

Dr. J. I. MCKANE (Pendleton) referred to the successful debut recently of the pathology service to general practitioners in Salford. This now enabled simple pathological investigations to be done. He thought that in consequence fewer patients were being referred to hospital. Dr. G. J. CRAWFORD (Salford) said that with his new laboratory the new service was meeting all the demands made upon it so far, but they were receiving only about 30 requests per week.

Correspondence

Registration of Medical Auxiliaries

SIR,—The need for a reasonable guarantee that those who profess to look after the health of the people should have received an adequate training and attained a sufficient qualification has led to the statutory registration of doctors, dentists, nurses, and midwives, but this guarantee is still lacking in the case of the increasingly important group of medical auxiliaries. In 1936, largely on the initiative of the British Medical Association, the Board of Registration of Medical Auxiliaries was formed to undertake the keeping of a register on a voluntary basis. Since that time the Board has helped to maintain the necessary standards, though the defects of a voluntary registration have been apparent.

Four years ago the (then) Minister of Health set up a series of committees to "consider the supply and demand, training, and qualifications of certain medical auxiliaries in the National Health Service and to make recommendations." These committees issued their reports two years ago. One of the recommendations, agreed to by the majority of every committee, was the setting up of a statutory body, under the aegis of the Privy Council, one of whose functions should be "the maintenance of registers of medical auxiliaries qualified for employment in the National Health Service." It was thought that this machinery could be established on a more representative basis than was possible within the confines of a Government department.

On March 19 this year the present Minister of Health announced in the House of Commons that "there is insufficient agreement on fundamental matters to proceed with statutory registration on the lines proposed in the reports," and he added that it was proposed to make regulations prescribing the qualifications for medical auxiliaries for the purpose of employment in the National Health Service. We must hope that this is but a temporary expedient and but a prelude to the establishment of a statutory register, but we have no guarantee of this. Meanwhile it behoves everyone concerned carefully to scrutinize any regulations which may be issued so that no lowering of standards may result, and constantly to keep in mind and to press for the establishment of a statutory register which would bring medical auxiliaries into line with the other professions which deal with the maintenance of health.—I am, etc.,

London, N.W.3. ZACHARY COPE.

The Premenstrual Syndrome

SIR,—The articles on premenstrual tension in the *Journal* of May 9 are of very great interest. In 45 consecutive cases of migraine in women of the child-bearing age I found that attacks occurred in the premenstrual phase in 16, at the onset of the menses in 7, and after the onset of the menses in 5. The others had attacks of migraine precipitated by other factors which were not obviously related to the menses. Some evidence that migraine is associated with disturbance of sodium metabolism was given by Dr. Dorothy Adams Campbell and myself and Miss Eva M. Tonks in the *Journal* of December 15, 1951 (p. 1424). The other factors which will precipitate migraine, such as tension states, physical fatigue, and infections (after the acute stages), will all exacerbate symptoms of premenstrual tension, and should be taken into account in the treatment.

In the migraine clinics of the Birmingham Eye Hospital premenstrual migraine is treated with diuretics such as ammonium chloride, urea in large doses, and with either ethisterone or with methyltestosterone in the doses given by Dr. Linford Rees (*Journal*, May 9, p. 1014). The tendency to relative hypoglycaemia and hunger, which incidentally can also precipitate true migraine, can be dealt with to some extent with a high protein diet.

I feel that further study of these questions will give valuable information as to the nature of the essential

constitutional background of many of those complaints which are labelled as being "psychosomatic."—I am, etc.

Birmingham. K. M. HAY.

SIR,—Dr. Raymond Greene and Dr. Katharina Dalton (*Journal*, May 9, p. 1007) suggest that water retention may be the link between the menstrual period and attacks of migraine, bronchospasm, nasal congestion, "rheumatic" pains, and various dermatoses. Two dermatoses which commonly flare up at period time are rosacea and neurodermatitis. When this list is reviewed it will be seen that all the disorders named belong to the "stress disorder" group, and their association with emotional tension is well established. Thus it may be that the period sets off attacks of these disorders only when it provokes conflict and emotional excitation. It is a familiar clinical observation that a woman who has migraine attacks each month will lose them when her conflicts over sex feeling and the female role in life are dealt with by psychotherapy. The same is true of vasomotor rhinitis, tension pain (Hench's "psychogenic rheumatism"), and the stress disorders of the skin. Water retention, of itself, could not be the whole explanation of these cyclic reactions. It is, perhaps, one of the mechanisms through whose agency mental tension effects physical changes.—I am, etc.,

London, W.1. DESMOND O'NEILL.

SIR,—I am most interested in the two papers in the *Journal* of May 9 on the premenstrual syndrome and its treatment, because the condition is a personal problem and my solution to it is different from that given by Drs. Raymond Greene and Katharina Dalton (p. 1007) and by Dr. Linford Rees (p. 1014).

In my own case premenstrual tension became increasingly incapacitating from about the age of 20. It lasts 10–14 days and is at its height in the last seven days. In addition to the general anxiety and depression there are outbursts of irrational irritability occurring most frequently in the early morning during sleep, which is interrupted by them. When these outbursts occur in the daytime they are preceded, and sometimes followed, by various distortion phenomena, feelings of unreality, etc. Some years ago depression became so marked a symptom that advice was sought, and dextroamphetamine sulphate, 15 mg. daily, was prescribed. This was effective in relieving depression and anxiety, but after 10 days produced an outburst so violent that the treatment was considered dangerous and discontinued. Pregnancy affords protection from all symptoms from the fourth month to almost two years after confinement.

Within recent months I have been interested to notice the increase in weight from ovulation to menstruation and the sharp decrease of 2–3 lb. (0.9–1.35 kg.) immediately after menstruation. Before I realized the cyclical nature of the increase I started a dietary regime and took 0.25 mg. dextroamphetamine sulphate to reduce appetite. The increase in weight is unaffected by this (despite reduced food intake), but the other symptoms—irritability, anxiety, depression—are, and the half-tablet is now taken daily from ovulation to menstruation.

I would be interested to know if other doctors have used this drug for this condition. It would seem to have none of the unpleasantness of the dehydration regime, and in this very low dosage none of the disadvantages of the hormone treatment. I would also like to know if the outbursts of irritability have been encountered by other doctors. It has been suggested by a psychiatrist friend that these are similar in nature to the so-called psychomotor attacks of epilepsy.—I am, etc.,

WOMAN DOCTOR.

SIR,—In the "Premenstrual Syndrome," by Drs. Raymond Greene and Katharina Dalton (*Journal*, May 9, p. 1007), it is stated that the condition is due to abnormal deviation of the oestrogen/progesterone ratio. One can only ask how such a ratio can be considered abnormal if it admittedly occurs in nearly half the population. If it be conceded that the "abnormal" ratio is indeed the "cause" of the undoubted symptoms, one again asks what is the real cause of the "cause"? Is it an indictment of our present way of life?—I am, etc.,

Ilford. R. N. C. SMITH.

Subcostal Pain Following Controlled Respiration

SIR,—Dr. T. T. Currie (*Journal*, May 9, p. 1032) should not dismiss so lightly the transient excitation produced by succinylcholine as a cause of the chest pain which sometimes follows its use. If he will take the trouble to have himself injected with 10 or 15 mg. of the drug I think he will find, as I did, that the muscular contractions which precede paralysis can be quite painful and leave a feeling of stiffness which lasts a day or two; mine was chiefly under the sternum and in the back of the neck. As the amount of twitching seems to vary with the speed of injection he may help his patients by giving succinylcholine slowly.

The two patients who had pain but no succinylcholine must be explained otherwise; by all means let Dr. Currie inflate with less vigour, but I doubt if this alone will eliminate the complaints. It will be interesting to know.—I am, etc.,

London, W.C.1. CYRIL SANGER.

Long-delayed Rupture of Spleen

SIR,—Mr. C. G. Attenborough (*Journal*, February 14, p. 380) gives an interesting account of two cases of long-delayed rupture of the spleen, and refers to the arrest of haemorrhage by perisplenic haematoma. This was the commonest means of arrest of haemorrhage found at operations or necropsy in my experience when I practised general surgery in India, where rupture of the spleen is a common emergency. It is usual to find a damaged spleen surrounded by clots while the blood which is free in the peritoneal cavity remains fluid.

In 1945[1] I published a case of a very grossly damaged spleen in which haemostasis was complete in a patient who had succumbed to other injuries. Haemorrhage which is delayed a few days indicates failure of efficient clotting, while long-delayed haemorrhage is due to autolysis of the clot, and therefore comes within the category of secondary haemorrhage. I have never seen a case where the rupture of a subcapsular haematoma was an obvious explanation of delayed bleeding, and this phenomenon, if it occurs at all, must be uncommon, and it is difficult to imagine that "tamponade" by slippery serous-covered structures such as omentum or stomach can be an important feature favouring cessation of bleeding.—I am, etc.,

Melbourne. FRANKLYN STONHAM.

REFERENCE

[1] *Indian med. Gaz.*, 1945, **80**, 547.

Test Strips for Dry Sterilized Syringes

SIR,—Failure in the human element in a syringe service may result in the occasional issue of unsterile syringes. This is especially liable to occur in hospitals where the syringe service is too small to warrant the use of a special department and staff, and where it is run as a subsidiary function of the theatre or laboratory. Having experienced two local infections probably due to contamination introduced by syringe or needle (one a chronic muscle abscess, the other a thrombophlebitis), the need was felt for a device to ensure that every syringe and needle had been heat-treated.

The following simple test strip has been in use in this hospital for over five months, during which time it has on several occasions indicated inadequate sterilization or omission of sterilization. Filter paper is soaked in saturated sodium bicarbonate solution and dried at gentle heat. A dried strip is added to each syringe and needle assembly. After a few minutes at 160° C. the strip assumes a brown colour. While the colour change does not prove adequate sterilization, it does indicate that the syringe has been subjected to a sterilization procedure. Inadequate sterilization

has on occasions been found to be due to uneven heat distribution in a well-filled sterilizer. The sterilizer thermometer has at such times given a fallacious sense of security. The strips have been found satisfactory after three months' storage.—I am, etc.,

Penzance. T. D. S. HOLLIDAY.

Importance of Post-mortem Examinations

SIR,—The importance of post-mortem examinations, not only for research but also especially for raising the standard of medical practice, has been stressed by the late Dr. C. O. Hawthorne (*Journal*, 1935, **1**, 616) and others, but is still not sufficiently appreciated.

The National Health Service could, without much cost, provide facilities for post-mortem examinations on patients dying at home and thus help the general practitioner to improve his education and efficiency as well as enlist his co-operation for clinical research. After decease of any patient the doctor in charge should, with consent of the relatives, be able to arrange for admission of the body to the nearest hospital, or any hospital where the patient may have been under treatment. Transport could be by ambulance and further procedure as if the patient had died in hospital. The doctor should receive a full report on the necropsy and perhaps also a small fee for attendance.

If the necessary facilities were granted, a good deal of propaganda would certainly be required to bring their importance to the notice of the medical and lay public before necropsies cease to be an exception and become the rule—as they should be.

The rapid introduction of new and potent remedies makes careful check on our failures more than ever necessary, and the general practitioner must be enabled to obtain the true facts for his own enlightenment as well as for the progress of medical research.—I am, etc.,

London, W.1. F. E. LOEWY.

The Metric System

SIR,—I had intended to take no further part in this correspondence, if only because none of the points made in my letter in the *Journal* of March 14 (p. 619), wherein I ventured to criticize Dr. C. Langton Hewer's letter (*Journal*, February 21, p. 450), were answered by him. Further, I thought that a chuckling silence was the best possible retort, as well as the most space-saving, to his highly entertaining final paragraph. However, having been soothed by Dr. Langton Hewer, I have again been roused into protest by Dr. J. W. Shackle (*Journal*, April 18, p. 887), who, after a mystifying reference to goose and gander, accuses me of saying that "we are wickedly inaccurate in talking about 'ccs.'" I challenge him to find any such statement by me at any time or in any place. What I did insist was that the issue as between cc. and ml. had nothing whatever to do with that between the metric and any other system of weights and measures. Dr. Langton Hewer presumably now agrees, because he is silent on the matter.

Apparently Dr. Shackle does not, for he goes on to ask that I should tell him "what is the exact difference between a 'cc.' and a 'mil.', and whether the difference is enough to be of the slightest significance." I propose to do nothing of the sort, for two good reasons. The matter was given detailed discussion from 1924 to 1929; any good scientific library must contain the publications in which the difference was explained. One reference is to an article called "The Millilitre" in *Nature* (1929, **124**, 622). Those of us with a scientific training have always preferred to use the more, rather than the less, precise of the two units, even when the difference had no practical effect, for this helped to inculcate in ourselves good habits against the occasions when the difference did really mean something—for example, in some microchemical work.

As to Dr. R. A. C. Herron (*Journal*, April 25, p. 938), why does habitual usage prevent his saying "half, or 0.5 mg.," instead of "nought comma nought nought nought five" gramme, without making confusion worse confounded? I have seldom heard such nonsense. And, to use his own dialectical technique, who indeed would argue that the difference between (a fig for his "mental pictures") 0.45 and 0.65 mg. is not more quickly appreciated than that between 1/150 and 1/100 gr.? If Dr. Herron is still confused by "those damned dots" I would suggest that he ought to find it no more difficult to remember the difference between 1/24 and 1/16 mg. than that between 1/150 and 1/100 gr. Dr. Herron has managed to introduce yet another red herring into this discussion by implying that the use of fractions is incompatible with the adoption of the decimal system. Since when? Has he never heard pharmacists talk of one-tenth of a mg. or a quarter of a gramme, or himself never referred to the running of a half-kilometre race? The amusing end to Dr. Langton Hewer's last letter is, need I point out, an impish exploitation of the same fallacy, to be welcomed on the grounds of its impishness, but hardly as a serious contribution to this discussion. Not, as he would say, for 0.00027 hr.—I am, etc.,

London, N.W.3. A. L. BACHARACH.

SIR,—I can assure Dr. C. Allan Birch (*Journal*, May 9, p. 1049) that I am acutely aware of the origins of "ml.s" and "cc.s" and of the highly pedantic distinction between them. A matter of some five—or is it six? (there, how easy to be wrong in this system)—places of decimals. How well Dr. W. Edwards (*Supplement*, May 9, p. 217) describes the metric system as "designed for those who can only count on their fingers."

Dr. Birch counters the dangers of the misplaced dot with those of the malformed drachm sign. I hold no brief for this sign, which I have always thought idiotic, but errors in this are surely safeguarded by the dispenser. For this sign indicates the dose, and the dispenser is trained to know when this is poisonous. If it is excessive he should (*a*) look for an exclamation mark after the dose, or (*b*) ring up the doctor and verify the amount. Errors with the decimal point, however, more commonly occur when the dispenser is making up the bulk medicine, neglecting to make a rough check to establish the position of the point—a horribly easy mistake to make during rush hours. I can think of two deaths as a result of such errors in making up thallium for depilation; and an anaesthetist was mulcted in heavy damages because he followed out exactly the directions in an expert's paper but had not seen a correction made a week later altering the position of a decimal point and reducing the dose by a tenth.

But an additional point about the old system is that it was adjusted to allow the patient to measure his dose in teaspoons, dessertspoons, or tablespoons. Must every family now purchase measures graduated in "mils."?—I am, etc.,

London, W.1. J. W. SHACKLE.

Controlled Hypotension in Neurosurgery

SIR,—Dr. David Aserman's article on controlled hypotension (*Journal*, May 2, p. 961) raises several controversial points. First, let me protest most vehemently against the technique being labelled a "form of anaesthesia," which it most certainly is not. Hypotension can be produced with one of the hexamethonium drugs, supplemented if one wishes with procaine amide, in almost anyone without any nearer approach to anaesthesia than the syncope that is likely to happen if the victim sits up too quickly.

Dr. Aserman admits the possibility of cerebral anoxia, but distinguishes it from the interesting condition he has described and which he has named "retractor anaemia." In fact, these two conditions obviously spring from the same evil—inadequate pressure in the intracranial arteries. The only difference between the conditions is that the former has more or less general effects and the latter has more or less local effects. What is certain is that cerebral anoxia, whether local or general, can produce both physical and psychical sequelae. One wonders how many of our enthusiastic bloodless phlebotomists are carrying out properly controlled investigations, which of course must include

not only the incidence of the immediate mortality (investigation of this has provided sufficient material for some papers already published) and the almost immediate morbidity (investigations sufficient for all other articles published so far), but it must also include investigations of the quite possible remote psychic affects causing various behaviour changes. Dr. Aserman is batting on a good wicket, as he is able to say that the results of anoxia "may possibly have been masked by surgical trauma." The surgeon also seems to be in an enviable position. But it seems somewhat unscientific that a brilliant operation may have been ruined by the anaesthetist or a brilliant anaesthetic may have been ruined by the surgeon and no one is quite sure of the real answer.

No doubt controlled hypotension has its place in surgery, and it would seem that in intracranial surgery its immediate advantages considerably outweigh its immediate dangers, but let us hope that somewhere someone is really investigating the very possible and quite likely horrific remote consequences of the cerebral anoxia caused by this technique.—I am, etc.,

Chesterfield. H. E. POOLER.

SIR,—I have some experience of arteriotomy for hypotension in neurosurgery, and was therefore particularly interested to read Dr. David Aserman's article (*Journal*, May 2, p. 961) on the use of hexamethonium and procaine amide in this field.

Dr. Aserman mentions that during an operation for removal of a meningioma a big vessel was accidentally opened and a profuse and rapid loss of blood resulted. The condition of the patient was fairly satisfactorily maintained by rapid replacement of blood and levelling of the table. I have had a similar experience during arteriotomy, when severe haemorrhage accompanied the fractional removal of a meningioma in an otherwise bloodless field. Control of the blood pressure was easily retained by intra-arterial transfusion of the blood already removed from the patient, followed by stored blood. It seems probable in this type of case that permanent loss of blood pressure control may follow haemorrhage during methonium hypotension, in spite of a faultless technique; whereas the ease with which intra-arterial transfusion can be performed in arteriotomy is a safeguard, and surely one of the great advantages of this method. Is it Dr. Aserman's view that in the "failures" he mentions bleeding is more severe than if the methonium drugs had not been used?

Unless the "convenience" of the surgeon is regarded as an indication for hypotension, the technique is only occasionally required, for in the majority of neurosurgical cases cerebral congestion can be avoided by strict attention to the essentials of this branch of anaesthesia—a perfect airway, adequate spontaneous respiration, and correct posture.—I am, etc.,

London, E.C.1. ROBERT I. W. BALLANTINE.

Modification of the Foley Catheter

SIR,—Mr. Paul Houghton (*Journal*, May 2, p. 994) may be interested to know that the three-way Foley catheter, for which he makes a plea in the final paragraph of his letter, already exists as Alcock's modification of the Foley catheter, and is marketed by William Warne & Co., Ltd.—I am, etc.,

Barnet. V. J. DOWNIE.

Endemic Goitre

SIR,—Repetition does not make a statement true. Sir Charles Harington's quotation from a memorandum of the Medical Research Council and Kimball's retelling of the results of the Akron experiment referred to in your annotation (*Journal*, March 21, p. 665) do not nullify the criticisms of both of these that have been made by me and by others.[1] The facts are as follows.

Goitre has never been produced by simple deprivation of iodine: whenever purified foodstuffs were used, with the greatest possible exclusion of iodine, no goitre was produced.[2 3] The postulated differences in the content of iodine in soils, water, and food between goitrous and non-goitrous regions have not been established. Noteworthy exceptions are to be found in South Africa[4] and in Danzig.[5] (Several authors have listed Danzig as goitre-poor, whereas it was precisely the high incidence of goitre in iodine-rich Danzig that led Liek to deny the "iodine-lack" hypothesis in the very paper from which his data have been erroneously copied.) Diminutions in the incidence of goitre more marked than those reported by Kimball, without any known change in iodine intake and without any reason for supposing that there had been any, have been reported.[6 7 8 9] In many places there was complete disappearance of goitre, with, in some, reappearance after a lapse of 50 years or more. Epidemics of goitre have been observed repeatedly, and are still being reported.[10 11] Goitre was not reported in England until the eighteenth century and in the Americas and in New Zealand until after the coming of white men, and in most of Africa, including Egypt, until quite recently.[8 12] The information regarding all of these is sufficiently extensive to enable us to conclude that goitre was unreported because it was absent.

Anyone who studies the history of goitre with an open mind will, I believe, come to the conclusion that the disease is due to a biological agent, and that such prophylactic or curative effect as iodine may have is due to a pharmacological action and not to its making good a nutritional deficiency.—I am, etc.,

New York. ISIDOR GREENWALD.

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Nicotinic-acid Deficiency

SIR,—I am greatly interested in Dr. Jonathan Gould's letter (*Journal*, April 25, p. 935), which followed Dr. G. H. Collins's case note (*Journal*, March 28, p. 731), and welcome the broader application of the use of vitamins in confusional states, a therapy used successfully since 1939.[1]

Everyone will agree with Dr. Gould that the parenteral use of nicotinamide is to be preferred to nicotinic acid, not only because it is not associated with the unpleasant vasodilator effects of the latter, but also because of its quicker action. I am also in complete agreement with him that deficiency of one single member of the B group of vitamins is improbable even if the symptoms and signs are highly suggestive of nicotinic acid or another single vitamin deficiency. I find, however, some difficulty in accepting Dr. Gould's "mixed barrage of vitamins" and also in considering the vitamins "as metabolic reagents having metabolic cycles of their own."

Dr. Gould was most successful in using intravenously 1,000 mg. aneurin (better thiamin), 200 mg. nicotinamide, 200 mg. pyridoxin, and 1,500 mg. ascorbic acid in 10% dextrose solution, but it is interesting that Dr. V. P. Wordsworth (p. 935) had in a case of an admittedly mild alcoholic intoxication dramatic results within three minutes after intravenous use of only 100 mg. pyridoxin. Moreover, intravenous application of only 30 mg. of thiamin in a case of Wernicke's encephalopathy was found to be sufficient for the patient to regain consciousness and to abolish temporarily most of the neurological signs.[2] While intravenous application of high doses of vitamins are certainly advisable in severe cases at first, the continuation of the treatment by intramuscular route is not only more efficient owing to the slow excretion but also less fraught with danger.

It is to be expected that in the near future the advocated "mixed barrage of vitamins" will be used on a large scale in psychiatric practice. Whilst I would welcome this step, I may perhaps be allowed to make two comments. First,

large doses of a single vitamin, especially of the B group, or an unbalanced mixture of these vitamins may easily precipitate latent deficiencies of other vitamins and may cause most unpleasant side-effects.[3] In my limited experience Dr. Gould's formula could be better balanced by reducing the amount of thiamin and by adding at least 50 mg. of riboflavin to the mixture. Secondly, it should be borne in mind that untoward effects like anaphylactic reactions with circulatory collapse, occasionally followed by death, have been described after intravenous application of several members of the B group of vitamins, especially if massive doses were given repeatedly.[4]—I am, etc.,

London, W.1. Z. A. LEITNER.

[1] Jolliffe, N., 1939, *Ass. Res. nerv. ment. Dis. Proc.*, **19**, 144.
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[3] —— 1948, *British Medical Journal*, **1**, 917.
[4] *Lancet*, 1952, **2**, 279.

Trichlorethylene in Labour

SIR,—I have read the letter of Dr. R. P. Robertson (*Journal*, April 18, p. 884) on this subject with interest. I can confirm from my own experience that his routine of pethidine, followed by gas and oxygen and later by trichloethylene, is most satisfactory for analgesia in normal labour.

I differ from him, however, in the use of chloral. I have not found pethidine a substitute for chloral by any means, and think that the old-fashioned "mother's mixture" still has a valuable place in the early stages of labour. It allays anxiety and is well tolerated if bromide is not mistakenly added to it. Moreover, it never stops the labour pains. My experience of pethidine, when used before the pains are coming at regular intervals of not more than five minutes, has been that it stops the pains just as effectively as morphine used to do. Consequently, I have found that sufficient comfort can be obtained by one or two doses of chloral mixture, so that I rarely need to give pethidine until the cervix is two or three fingers dilated and well taken up. Others may not agree that any analgesic is necessary before this stage, but, as niggling pains can and do last as long as 24 hours and prevent the patient resting, I feel it is helpful to secure a few hours' sleep then without the risk of arresting the progress of labour.—I am, etc.,

St. Asaph, N. Wales. A. H. HOLMES.

Reduction of Post-operative Pain

SIR,—We must be grateful to Mr. D. Lincoln Lewis and Dr. W. A. L. Thompson (*Journal*, May 2, p. 973) for their reiteration of the principle that when a pain arises from a localized area and gives rise to reflex complications it is more logical to relieve it by blocking the afferent nervous pathway than by administering analgesic drugs which act systemically and so depress other vital functions. Although apparently simple, the method described involves the administration of three-hourly injections over a period of three days—that is, up to 24 injections into each of two tubes—which must be very time-consuming to the nursing staff and disturbing to the patient, apart from the risk of introducing infection. The result that "all the cases had considerable relief from pain a few minutes after the injections were given" implies that even with three-hourly injections pain returned before the next dose was due.

At the cost of adding five minutes to a two-hour operation, a more continuous analgesic effect can be obtained by the use of depot anaesthetic solutions which make unnecessary any subsequent disturbance of the patient, his wound, and the nursing staff. At least two effective preparations have already been described by the writer[1] and Rutter[2]: "efocaine" (1% procaine base and 5% butyl *p*-aminobenzoate in glycols) and Rappaport's solution (2% benzocaine base in 40% urethane in water). Both act by precipitating the anaesthetic base at the site of injection. This crystalline deposit exerts a prolonged analgesic effect which may last for up to three weeks or more. The solvents are strongly hypertonic and should not be injected superficially or into inflamed tissues, as an osmotic reaction will result, as described by Howell (*Journal*, April 4, p. 285), although this has no permanent ill effects. I have used up to 20 ml. after 46 upper abdominal operations without unfavourable reactions.

The technique is all-important, because once the anaesthetic has precipitated it does not diffuse appreciably. More effective than infiltration into the wound or on each side of it is an intercostal block of the seventh to the eleventh thoracic nerves, carried out posterior to the midaxillary line so as to include the lateral cutaneous branches. At least 1.5 ml. must be injected into each space, and if the incision is near the midline both sides must be injected. Although accurate intercostal nerve-blocking requires a little practice, the results are most rewarding. For instance, following repair of perforated peptic ulcers, 11 patients required between them a total of only six injections of analgesics. Breathing is easier, cough is free, and even chronic bronchitics comment on how little their chests trouble them. It would appear that these depot solutions, or others based on similar lines, hold more promise than the use of water-soluble salts, which have only a transient effect and so require tedious or cumbersome methods of administration.—I am, etc.,

London, W.1. HENRI ROUALLE.

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[2] Ibid., 1952, **2**, 1418.

Magic, Medicine, and Religion

SIR,—Sir Sydney Smith (*Journal*, April 18, p. 847) is to be congratulated on his masterly analysis of such various therapeutic methods as medicine, magic, and religion throughout the ages. His conclusion that "all of them are directed towards the restoration of the harmonious relationship in the functions of the body through the removal of some source of disharmony in the mind" is most apt in this present age not peculiarly noted for its equanimity or serenity.

It is unfortunate that the main thesis is marred, but by no means invalidated, by references to the mediaeval period which are inaccurate. These inaccuracies are not singular, but in a letter to the editor it seems more advisable to correct the most important of them—that is, the statement that science was discouraged by the Roman Catholic Church. This statement is not supported by either the teaching or the practices of the Church in those days. The Church's attitude to science is best summarized by the writing of Cardinal Borromeo, who officially interrogated Galileo at the time of the controversy over the Copernican theory. He wrote as follows: "I say that if a real proof be found that the sun is fixed and does not revolve round the earth, but the earth round the sun, then it will be necessary very carefully to proceed to the explanation of the passages of Scripture which appear to the contrary, and we should rather say that we misunderstood these than to pronounce to be false that which is demonstrated." Thus to reconcile the interpretation of Scripture with a really demonstrated and proved fact of science is surely no discouragement of the sciences. In practice also the Church encouraged and patronized the physical sciences, for was not the university of Bologna, the first of the universities as we know them, founded under papal charter?

It is difficult in a short letter to expound on these historical problems, so I would recommend to Sir Sydney a recent book on the history of science from A.D. 400–1650. It is entitled *Augustine to Galileo*, by A. G. Crombie, of the department of history and philosophy of sciences, University College, London, and is a more serious study than the popular bibliography quoted by Professor Smith.—I am, etc.,

Dublin. J. BARNES.

SIR,—May I make a short comment on references to Christian Science in the report of the Finlayson Memorial Lecture by Sir Sydney Smith (*Journal*, April 18, p. 847)?

In the lecture Christian Science treatment appears to be identified with mental suggestion. But the method of Christian Science treatment is essentially that of prayer,

based on a spiritual understanding of the nature of God and His creation. The discoverer and founder of Christian Science, Mary Baker Eddy, indicates this in the first sentence of the Christian Science textbook, *Science and Health with Key to the Scriptures*: "The prayer that reforms the sinner and heals the sick is an absolute faith that all things are possible to God—a spiritual understanding of Him, an unselfed love."—I am, etc.,

London, W.C.2. COLIN R. EDDISON.

SIR,—Many years ago when I began research about ancient Egyptian medicine I went to see Sir Gaston Maspero—the greatest Egyptologist—and asked him his opinion of the subject. He gave it readily. It was: "What the ancient Egyptians knew about medicine is not worth knowing." I am now in entire agreement with that authoritative statement. Yet we frequently see eulogistic statements concerning their "wonderful knowledge" based largely on myths and legends.

I cannot now go fully into the matter, but I would like to draw attention to a few statements made by my old friend the illustrious Sir Sydney Smith (*Journal*, April 18, p. 847) under the above heading. With regard to the Ebers Papyrus he makes the extraordinary statement that it shows a "remarkable standard of knowledge." It does nothing of the sort. Every ache and pain is subject to supernatural influence, and disease was held to be caused by entry into the body of evil spirits who produced psychological changes according to their malignity. No serious attempt was made to define a disease, or to describe it as a separate entity. It is merely a haphazard collection of recipes mingled in an indescribable hodge-podge. All this looks ludicrous, and much popular writing based on such translations has professed to give us some account of Egyptian medicine—without value and very misleading.

Now as regards the Edwin Smith Papyrus, we are told by the eminent jurist that it indicates a "fairly high degree of medical knowledge." It is a surgical treatise and deals in a "common-sense way" with fractures and other lesions of traumatic origin, but is in no way an improvement on the methods employed by the witch-doctors and fiki at the present day. In the treatise, to be sure, great emphasis is laid on the state of the pulse and the origin of sepsis, of which condition they must have had wide experience, as hygiene is not mentioned—indeed, they had no word to signify cleanliness. Fractures of the skull were naturally very frequent. A puncture of the skull is likened to "a broken hole in a pottery jar." Yet there is no mention of trepanning, although this operation was practised by other ancient peoples, especially the Chinese, and this omission is quite sufficient in itself to prove that the treatise does not display a "high degree of medical knowledge." Instead the routine treatment for head injuries was fresh meat for one day followed by grease and honey.

There are other serious defects which cannot be discussed now. In the treatise there are 48 cases, 14 of which were left untreated, and there is no indication to show the final results in those treated. Yet Professor Breasted, the translator, in his grossly exaggerated eulogism suggests that the papyrus should be considered the standard work and all the other papyri scrapped. He even "hazarded a guess," according to Sydney Smith, that the original work was by Imhotep himself. But there was more. In his exaggerated enthusiasm for the papyrus the professor seems to consider the claims of the immortal Hippocrates as secondary to "our scientific surgeon," and makes the remarkable statement that the Hippocratic school was far more interested in the human body when it was sick than when it was well, and furthermore was evidently more inspired by a desire for knowledge than by the hope of curing the patient. Such exaggerated and erroneous statements should be considered when we come to consider the value to be placed on the claims made by him as translator on behalf of his "scientific surgeon." In extenuation it might be said he was a layman writing on a medical subject.

Lastly, I wish to refer briefly to Imhotep, whom Professor Smith considers "the earliest physician we know by name," as many others do also. There is not the slightest evidence in support of this claim. We know nothing of his early history, of his birthplace, or his childhood, or of his appearance in the flesh. There is no record of any sort in support of his medical qualifications. His name does not appear in the medical papyri, in any of the ancient monuments or texts, and even in the Theban recension of the *Book of the Dead*, although in certain aspects the god (for he was a god) had a funerary character; neither is he mentioned by any of the contemporary sages, many of whose sayings survive. The omission of his name in connexion with any work or discovery or text is very remarkable when we know the names of many others who have been associated from the very earliest times with the practice of medicine.

At the International Medical Congress in Cairo in 1934 I read an exhaustive paper on Imhotep. The paper can be seen in the form of a pamphlet at the Wellcome Historical Medical Museum by anyone interested in this controversial subject.—I am, etc.,

Englefield Green, Surrey. T. GERALD GARRY.

Treatment of Threadworms

SIR,—I was interested to read the letter of Mr. W. Ivon Hayes (*Journal*, February 28, p. 510) about threadworms and the means of eradicating them by altering diet.

It may be of interest to report a case of an adult female who had had threadworms practically all her life. She reported that her faeces were sometimes "alive with worms." She suffers from rheumatoid arthritis and has a very bad sinusitis. At one time she was given a course of aureomycin. She reported to me that since that course she has never seen any sign of threadworms, nor has she had any symptoms suggesting their presence. I do not know whether aureomycin would interfere with the life cycle of the threadworm, or whether the antibiotic in some way affected its food supply by altering the bacterial flora in the large bowel. So far as I know, there was no alteration in diet in this case.—I am, etc.,

Melbourne, Australia. FRANK MAY.

Uterine Tension

SIR,—Green *et al.*[1] have advanced the theory that ischaemia of the uterus is a major aetiological factor in eclampsia. According to them pre-eclamptics show a rise in plasma pentose levels. The substance derived from muscle adenosine is a result of muscle ischaemia, and the uterus was the only site for such a change. Increased uterine tension must be associated, and I expressed the opinion[2] that the data must prove of great value in support of the thesis that increased uterine tension was responsible for the toxaemic syndrome.

Now Corner and Csapo (*Journal*, March 28, p. 687) have shown that the isometric tension of the myometrium is related to the actomyosin content therein, and that the myosin component breaks the terminal phosphate linkage of adenosine triphosphate present in the muscle releasing adenosine. Thus adenosine comes to provide as well an indirect measure of the isometric tension of the myometrium. The levels of actomyosin in the various periods of pregnancy bear relationship in time to the incidence of toxaemia. Uterine ischaemia (Green) and uterine tension (Corner) are both referable to adenosine production evidently, and become equivalent.

There is a further advance. Arising from these fresh researches is the relationship of the potassium-sodium ratio to the isometric tension of the myometrium. A potential avenue for therapeusis is thereby provided. The practical value of the utero-renal reflex (Franklin[3]) and the Trueta mechanism cannot fail to emerge.—I am, etc.,

Salisbury, S. Rhodesia. JOHN SOPHIAN.

REFERENCES

1 *British Medical Journal*, 1951, 2, 571.
2 Ibid., 1951, 2, 797.
3 *Lancet*, 1952, 2, 1141.

The Judet Operation

SIR,—I would agree with Mr. A. Webb-Jones (*Journal*, April 25, p. 935), that pain does recur in certain cases following the Judet operation for osteoarthritis of the hip. His explanation for this is not, however, satisfactory. To suggest that the recurrence of pain is due to mechanical wear resulting from the fact that no prosthesis accurately matches the removed head is to ignore the fact that when the same

operation is carried out for subcapital fracture of the femoral neck the results, as regards freedom from pain, are uniformly good. Mr. Webb-Jones stresses the painless range of movement in these latter cases, although the same incongruity between the bearing surfaces must be present as when the operation is done for osteoarthritis.

In osteoarthritis of the hip the disease process affects not only the articular surfaces but also the capsule and periarticular structures, and from the evidence available it would appear to me that herein lies an important cause not only of the pain which may recur but also of the limitation of movement which may persist despite operation.

Mr. Webb-Jones does well to draw attention to the fact that indifferent results can follow the Judet operation. But, if there is no reason for complacency, still more is there none for despondency. While far from being the final solution, it does, I think, represent an advance. To go back to displacement osteotomy for osteoarthritis must surely be a retrograde step.—I am, etc.,

London, W.1. T. M. HENNEBRY.

Litigation Against Doctors

SIR,—Now we have seen the National Health Service Act and Legal Aid and Advice Act in action, many are wondering about the future of medicine. The State-treated patient can so easily become the State-aided plaintiff; costs mean nothing to him, and he can readily use or abuse both these Acts, as is shown by the increasing litigation against all medical practitioners on allegations of negligence in treatment, with and without just cause. If clinicians are forced to cover themselves against all possible criticism, and are obsessed with this need, then indeed we will become careful Civil Servants, and good clinical medicine will die and with its passing the cost of the Health Service will become prohibitive. Are the minority of our patients going to force us into this approach to medical practice?

But the matter does not end there. As I write I have before me a letter from the secretary of a hospital management committee: "The points raised in your letter," he writes, "are of extreme importance to the hospital management committee, who are the ultimate authority held responsible for any matter concerned with the treatment of patients and the legal consequences thereof." Is this really true? Have consultants, in their contract of service to the national hospitals, really handed over their responsibilities in the treatment of their patients to lay committees, the large majority of whose members have no medical experience at all? Is this the meaning of the National Health Service Act? My legally minded surgical colleagues tell me that there is a world of difference between a contract *for* service (which we believe we have agreed to) and a contract *of* service (which apparently some believe we have signed). The Hon. Justice Hilberry summarized the distinction in this way: "... In a contract for service the master can order or require what is to be done, while in the other case (a contract of service) he can not only order or require what is to be done but direct how it shall be done."

If the real objectives of the National Health Service are to be achieved, then the individual members of the profession must carry the full weight of their clinical responsibility and pass no part of this responsibility to any lay committee, nor share it with them. Yet can it be clearly stated now that our contract is *for* service? If this is so, have we any guarantee that some future negotiating body or some future legislation without negotiation will not change this apparently important little word?

Concerned as I have been for many years in the treatment of accidents, I am well aware that this field of surgical practice is open to litigation. The injured often do not honestly understand why they should suffer a permanent disability or a lengthy convalescence. Was the splint left on too long, taken off too early? Was it too loose or too tight? Why, after a week's effort to save a limb, was it eventually necessary to amputate it? Was this the surgeon's fault, or the house-surgeon's, or the nurse's? "Well," say the minority, "it will cost nothing to find out, and there may be a good financial return if the hospital did make a mistake."

And so litigation is started. The hospital case notes are called for, and, because by law they are the "property of the Minister," they can be, and to my knowledge have been, impounded by the Minister's lay officers, and the surgical staff as a consequence have been unable to examine them. Often the case is defended jointly by a regional board and a hospital management committee. Perhaps the plaintiff succeeds and a member of the medical staff, in the judgment of the Court, has, in fact, been negligent. So a regional board and a hospital management committee can now claim damages against the unfortunate doctor, for such is the law. Medical men now find themselves open to attack not only by their patients but by their hospital authority.

Is it any wonder that there is now a great shortage of junior medical men applying for appointments to the casualty departments of all hospitals of this country, and is there any likelihood, if these conditions continue, that inadequately staffed casualty departments will attract medical men in the future? The situation is about as serious as it could be, for to the 1,000-odd hospitals of this country over 1¼ million accident cases go for treatment each year. The organization generally available for treatment of accidents in our hospitals is already poor, but over it a medico-legal cloud has cast a very dark shadow.—I am, etc.,

Birmingham. WILLIAM GISSANE.

SIR,—Your medico-legal correspondent stated that the judge in cases of malpraxis weighed up the evidence of the medical experts on the two sides before giving judgment. I know of two cases, and there must be more, in which the plaintiff was awarded damages without medical evidence to support his claim, the judge making up his mind on his own on the question of the exercise of skill, care, and diligence.

It is this new development which agitates us all.—I am, etc.,

London, W.1. A. DICKSON WRIGHT.

The Floating Spleen

SIR,—In the *Journal* of August 23, 1952 (p. 446), Dr. H. W. Wyile reported a case of a movable spleen. I should be glad if you would afford me the space to report on a case I had in British Honduras in 1949.

A Maya Indian woman, of about 55 years, came to the out-patient department complaining of discomfort and pain for a period of years in the left hypochondriac area and inclined to become more severe. As the patient was slim it was not difficult to detect in the left iliac fossa a swelling which could be moved fairly freely in any part of the left abdomen up to the costal margin. The diagnosis made by my colleagues varied from a pedunculated fibroid to a floating kidney. I, too, thought the swelling to be a movable kidney.

A laparotomy was done, using an upper midline incision, and I was easily able to bring into view the swelling, which was a spleen about four times the normal size. Its removal proved quite a simple matter. Ligation of the long pedicle between two clamps was all that was necessary. On section the lymphatic tissue was permeated with areas of cystic degeneration. I think I am right in stating that a movable spleen is a rarity in the surgical field.—I am, etc.,

Tumatumari, British Guiana. A. H. BARTLEY.

Flood Appeal

SIR,—No doubt it will be of interest to all members to know that as a result of our recent appeal to the Essex Branch of the Association we raised a sum of £486 18s. 10d. Generous as our subscribers were, this amount would have been quite inadequate for the needs of our fellow practitioners in distress, and we owe a great deal to the assistance of the Sir Charles Hastings Fund, which enabled us to fulfil all the demands made upon us.

Our fund is now closed and the whole amount subscribed has been used for the purpose intended. May we, through you, Sir, once again offer our grateful thanks to all who subscribed?—I am, etc.,

Westcliff-on-Sea. G. T. FOSTER-SMITH,
Honorary Treasurer,
South-east Essex Division.

POINTS FROM LETTERS

Unit System of Prescribing

Dr. DAVID HALER (London, W.1) writes: I was very intrigued to read Dr. Bruce Williamson's suggested unit system of prescribing (*Journal*, March 14, p. 620). It was perhaps a little unfortunate that this important letter became embedded into a discussion on the metric system. I am sure that this has led to the overlooking of this important contribution. Speaking as a practitioner of more than 20 years' experience, and one with considerable experience of a coroner's work, I would like to add my plea to the adoption of some such system as that advocated by Dr. Bruce Williamson. I am sure that students in general would also welcome such a simplification of the burden of learning that they have to carry.

The Medical Practitioner and the Law

Dr. HENRY CHURCHILL (London, N.W.8) writes: It is not difficult to find a professional expert witness who, after the event, will say: "Yes, I would have operated at once" (although sometimes we know he is not really such a bad surgeon as that), but it is not easy to find an expert who has a big enough and convincing enough witness-box personality to say, and get away with: "I don't know what would have been my line of treatment, because I was not there." Might the judge have sitting with him a medical assessor of his choice, from a panel? The panel could be formed from a representative selection approved by the whole profession, possibly nominated by the Royal Colleges. One can think of quite a number of names which should be acceptable. The alternative, it seems, is an increasing expense in every kind of investigation and consultant opinion as an additional insurance. This the country simply cannot afford.

Magic, Medicine, and Religion

Dr. GEORGE V. BOYLE (Glasgow) writes: I have read Sir Sydney Smith's Finlayson Memorial Lecture on magic, medicine, and religion (*Journal*, April 18, p. 847) with amazement. . . . Professor Smith states that the Roman Catholic Church in the early centuries discouraged science, etc. In all fairness why does he not mention that in the Middle Ages 81 universities were founded by the Catholic Church, mostly by papal authority? The chief among these were Oxford, Cambridge, Glasgow, Paris, Vienna, Bologna. Where would science be without the work of the following Catholic scientists: Schwann (histology), Müller (physiology), Vesalius and Fallopius (anatomy), Copernicus and Laplace (astronomy), Ampère, Volta, Lavoisier, Galvani, Foucault, Roger Bacon, H. Fabre, J. Fabre, Gutenberg (inventor of printing), Roentgen, Agricola, Marconi, and the man to whom medicine must be for ever grateful, Pasteur, who died embracing his crucifix? Again he states that radio and television are outstanding examples of things "accepted as commonplace today" which "would have been considered miraculous not so many years ago." By whom, and why? The results of giving thyroids to cretins, quinine for malaria, and opium for pain would have appeared miraculous 100 years ago. Maybe our ancestors knew that a miracle is a supernatural event, a sensible (that is, perceived by the senses) fact, extraordinary and divine (Tanquercy, a theologian), or, as the *Oxford Dictionary* states, an event due to supernatural agent, act of supernatural power. The Medical Bureau at Lourdes, which has thousands of medical men as members, openly invited doctors from every country in the world to visit Lourdes and offered every facility to enable them to inquire fully into the complete history of the cases recorded as miraculous cures. Hundreds of these cases are recorded and none have ever been proved to be false.

Dosage of Penicillin

Dr. W. A. BELLAMY (Aylesbury) writes: Most therapeutic agents appear to have a standardized dose which has remained constant for years. Not so penicillin. I am not at all sure that the enormous doses given now produce better results than the smaller ones given seven years ago, but I presume that the pathologists will refute this by statistics on blood concentrations. I have recently been advised to give a patient (now up and about, convalescent from pneumonia, with one slight relapse) 4 million units twice a day for 28 days. My own experience, for what it is worth, is that cases treated in practice (and many of the authors of refresher courses for general practitioners will be amazed to learn that cases are treated in general practice), cases of pneumonia, acute otitis media, carbuncles, cellulitis, tonsillitis, whitlows, etc., do very well, at all ages, on 1 million units, twice a day intramuscularly for five or six days. I get nothing like the same results with penicillin by mouth.

Obituary

E. D. PULLON, M.D., F.R.C.S.Ed.

Dr. E. D. Pullon, of Christchurch, New Zealand, died suddenly at his home from coronary thrombosis on April 23 at the age of 62.

Edwin Douglas Pullon was the second son of the late Dr. Henry Pullon, of Huddersfield, and was educated at the Leys School, Cambridge, and Edinburgh University, where he had a brilliant career, the promise of which was belied to a considerable extent by ill-health, which was the prime reason for his going abroad. At Edinburgh he took the B.Sc. degree and then graduated M.B., Ch.B. with first-class honours in 1912, later proceeding to the M.D., with gold medal for his thesis, in 1920. After qualification and the usual resident appointments he went out to South Africa on account of his health, and lived in Capetown, being appointed assistant professor of anatomy at Cape University in 1914. On the outbreak of the 1914–18 war he joined the South African Medical Corps and served in the German South-west African Campaign with the rank of major. He returned to Capetown in 1917 as assistant Government bacteriologist and then came back to Edinburgh for a time, worked at his M.D. thesis, and took the diploma of F.R.C.S.Ed. in 1922. Leaving Edinburgh again, he went out to New Zealand, his wife's home country, and settled in practice in Christchurch, where he served as assistant surgeon on the staff of the Christchurch Hospital. Ill-health still haunted him, but after recovery from a long illness he took a great interest in the activities of the New Zealand Branch of the British Medical Association and its campaign against the Government's social security proposals there. In 1947–8, when he was chairman of the Canterbury Division of the Association, he represented the South Island on a joint committee of four members in consultation with the New Zealand Government. These discussions were presided over by Judge Cleary, and it was through adoption of the Cleary Report that Section 8 of the Social Security Act of 1941 was repealed, the civil rights of the medical profession being thus reinstated at last. Dr. Pullon had always advocated the "refund system" of payment for medical practitioners, which enables a direct relationship to exist between patient and doctor. At the time of his death he was actively engaged on the executive council of the New Zealand Branch of the B.M.A.

Dr. Pullon came of a family of musical enthusiasts, wrote music and played the piano in his youth, and all his life took the greatest pleasure in music and the theatre. He missed the theatre very much in New Zealand, but loved entertaining touring companies there, whether they were Gilbert and Sullivan, Shakespearean, orchestral, musical or otherwise, and his house was always filled with travelling celebrities of one kind or another. Only a few weeks before his death he had been entertaining Anthony Quayle and the Stratford-on-Avon players. Like so many of his colleagues in New Zealand, he was a great Edinburgh enthusiast and never missed visiting his alma mater when he came to Britain. Dr. Pullon had a most unselfish, charming, and altogether delightful personality, and will be greatly missed. He was twice married, and leaves a widow and four children, with whom he had enjoyed a gracious, full, and understanding family life.—R. S. S.

Sir ROBERT G. ARCHIBALD, C.M.G., D.S.O., M.D.

B. N.-S. writes: A wide circle of friends will have heard with sorrow of the death of Sir Robert Archibald, whose obituary notice was published in last week's *Journal* (p. 1112). Long before the end of the thirty years he spent in the service of the Sudan Government "Archie" had attained a unique position in the community. Living in Khartum, the clearing-house of the Provinces, he came into contact sooner or later with everyone who served in the Sudan. To few men is it given to become so universally admired and respected as he was, and to be so warmly regarded by all who knew him intimately. And no man ever more richly deserved the popularity he enjoyed or made less conscious effort to achieve it. It was the homage willingly paid to a wise and gifted man, endowed with great charm, good manners, a genial sense of humour, and a hospitable nature. The knighthood bestowed on him towards the end of his career in the Sudan was a fitting reward for a life of selfless devotion to duty. He was a tireless and most conscientious worker in his chosen field of medicine, and the services which he rendered as director of the Wellcome Tropical Research Laboratories in Khartum were of inestimable value to the Sudan, where his name will long be remembered and honoured. Absorbed though he was in his work, he still found time to play his part in the social life of Khartum. He was fond of all games and sports such as tennis, golf, fishing, and shooting, and loved nothing better after the day's work was over than one of those unforgettable evenings duck shooting on the Nile.

Dr. CHARLES A. MACKENZIE died at Winnipeg on April 6 at the age of 83. Born in Ontario, he was educated at Upper Canada College and graduated in medicine at McGill University in 1899. Going to Winnipeg, he served for many years as chief medical officer of the Canadian Northern Railway (later incorporated into the Canadian National Railway), of which his uncle, Sir William Mackenzie, was a founder. In 1930 he was president of the Manitoba Medical Association, and as such was the official host for the British and Canadian Medical Associations which held a joint meeting at Winnipeg in that year. He was a close friend of Dr. W. Harvey Smith, who served as President of the British Medical Association in 1930, and with Dr. Harvey Smith he was largely responsible for the erection of the Medical Arts Building in Winnipeg, owned and operated by the tenant doctors and dentists. For 25 years, from its opening in 1923, he acted as president of the building and administered its finances with singular ability.

The sudden death of Dr. W. A. MAGILL on April 22 at the age of 72 came as a great shock to his patients and friends. William Arthur Magill was born on April 1, 1881, and was educated at the Methodist College and the old Queen's College, Belfast. His parents intended him for the Church, but after matriculating at the former Royal University of Ireland he took up the study of medicine and was a prize-man at Queen's and an exhibitioner at the Royal Victoria Hospital, Belfast. He qualified by taking the Scottish triple qualification in 1904, and then, before starting in general practice in Belfast in 1909, he was an assistant in Yorkshire and Portsmouth. At Belfast, where he soon built up a large practice, he was a keen and extremely conscientious worker, and his quiet and kindly manner endeared him to his patients and professional colleagues. He died in harness, as he hoped he would. Outside his profession his main interest was reading. He had a good knowledge of six or seven modern languages, and kept up his knowledge of Latin and Greek. He was also fond of motoring and gardening. His wife, formerly Miss Constance Spence, of Douglas, Isle of Man, predeceased him a short time ago, and he is survived by a son and daughter.—W. R. E. W.

Dr. A. E. THOMPSON, who died at Birkdale, Southport, on April 15 at the age of 82, had previously been in practice for 49 years at Barrow-in-Furness, where he was well known and greatly liked. He retired to live at Birkdale in 1949. Arthur Edward Thompson was born on April 21, 1871, and was educated at the University of Durham, where he was a student of outstanding merit. He gained the Charlton Scholarship and first-class honours in medicine in 1893, the year in which he graduated M.B., B.S., and three years later he took the degree of bachelor of hygiene. His first appointment was that of assistant visiting surgeon to the Newcastle-upon-Tyne Dispensary, but the war in South Africa at the turn of the century saw him on active service as a medical officer, and he became assistant district surgeon at Estcourt, in the Natal Province. When he returned to this country he settled in practice at Barrow-in-Furness, becoming known as "the doctor on the motor-cycle," a mode of transport he used for many years, and his quiet, friendly manner and cheery word endeared him to all. A member of the British Medical Association for fifty years, Dr. Thompson was honorary secretary of the Furness Division in 1922, and president of the North Lancashire and South Westmorland Branch in 1926–7. A staunch churchman, he was a regular attender at divine service until three weeks before his death.

Dr. A. N. FELL, one of the best-known medical practitioners in North-east Essex, died at his home at Colchester on April 19 at the age of 75. Alfred Nolan Fell was born at Nelson, New Zealand, on January 17, 1878, and was educated at Nelson College and at Otago University, continuing his studies at the University of Edinburgh, where he graduated M.B., Ch.B. in 1902, proceeding to the M.D. in 1906. In 1905 he became a Member of the Royal College of Physicians of Edinburgh, a distinction which he relinquished when he settled in general practice at Colchester in 1907, because at that time Members of the College were forbidden to dispense their own medicines. It was characteristic of the man to practise medicine as he thought best. In recent years he was reinstated at Edinburgh, an honour which modesty prevented him from mentioning even to his closest friends. After graduation Dr. Fell held house appointments at the Royal Infirmary, the City Fever Hospital, and at the Corstorphine Convalescent Hospital, Edinburgh. His distinguished academic career was matched by his brilliance as a Rugby footballer and as champion "miler" of the Scottish universities in 1901–2 and of Edinburgh University in 1901–2–3. While at Edinburgh he built up and led one of the finest Rugby sides in the history of the game. The record of his first season as captain read: matches played, 16; won, 15; drawn, 1; points for, 425; points against, 6. He was "capped" for Scotland in 1901, 1902, and 1903, and only injuries prevented him from playing in the two following years. He was the great wing three-quarter of his day, with a tremendous swerve and speed and a determined dash for the line. He retained a keen interest in the game until his death, and was the first president of the Colchester Rugby Club. As a past president of the Colchester Medical Society and through his long membership of the Essex Panel Committee Dr. Fell exerted a valuable influence on the general-practitioner services throughout the country—an influence he exerted also as a member of the British Medical Association. He was honorary secretary of the North-east Essex Division from 1915 to 1917 and again in 1920–1; honorary secretary of the Essex Branch from 1921 to 1924; chairman of the North-east Essex Division in 1927–8; and president of the Essex Branch in 1930–1. In 1918–19 he served as a temporary captain in the R.A.M.C. in Macedonia, Bulgaria, Serbia, and in the Caucasus.

We are indebted to Mr. RONALD REID for the following appreciation: The death of Dr. A. N. Fell will be lamented by all who knew him, for he was beloved and respected, and his patients were his friends. To many of his colleagues who have witnessed the changing scene in medicine it is like the end of an era, for he was one of the great general practitioners. Not

only was he highly skilled in his profession and devoted to the welfare of his patients, but he was a man of great wisdom and kindness, a true family doctor and adviser. In him, character, education, and experience were blended and matured to a degree not often encountered in the world of medicine to-day. He was a man of high ideals and modest to the point of self-effacement; at first meeting his sensibility might make him seem austere and distant, but suddenly his kindness and impish sense of humour would break through, and the warm smile and the twinkle in the eye would show the real man below the surface. He had a liberal outlook on life, for his interests were not confined to medicine, as those who were privileged to sail in the family yacht will remember. He was one of those rare human beings who had an innate knowledge of what is right and enduring; his self-discipline and his determination carried him through life as they carried him through the opposing team on the football field fifty years ago. When still in active practice he learned that he had not long to live. Pondering on the prospect of retirement, he remarked, "I shall play to the final whistle"; and that is exactly what he did. He will always be remembered for his devotion to ideals, his courage, and his humanity. He leaves a widow, three sons, and a daughter; another son died of wounds in North Africa in 1942.

Medico-Legal

ACTIONS FOR NEGLIGENCE

[FROM A SPECIAL CORRESPONDENT]

Anxiety undoubtedly exists among members of the medical profession because, as the medical correspondent of the *Daily Telegraph* has put it,[1] "what is classed as negligence is not negligence as understood by them." He submitted that some legislation was necessary to clarify the position. This was followed by a letter from Dr. R. W. Cope,[2] who stressed the fact that accidents do occasionally follow "simple procedures when there has been absolutely no evidence at all of any careless or ignorant practice carried out by the operator and the nursing staff concerned." He supported the desire for new legislation and suggested a Select Commission.

The law concerning the liability of a professional man has not changed. His duty is, as it has always been, to bring to bear upon all his professional activities the degree of skill and care possessed by an ordinarily competent practitioner of comparable standing to himself. Judges have repeatedly stressed that he does not, in the absence of very special circumstances, guarantee either the success of his treatment or the perfection of his technique; but he is liable for the consequences if he fails to apply that skill and care defined above. While the law has not changed, its application by judges and juries in individual cases in recent years has revealed a trend to the disadvantage of the doctor and the hospital.

Discovering the Facts

In the first place the judge (and jury, if there is one) has to discover the facts. Often there is a direct conflict between the witnesses on vital points—for example, on whether some particular examination was carried out. Every system of law has to provide a machinery for ascertaining the truth in such a case, and ours is the familiar procedure whereby witnesses give their evidence orally and are questioned. No better has yet been devised, nor is likely to be. The judge then makes up his mind about whom he believes. If the evidence of the doctor does not impress him, he will not believe his version of the facts: so with the patient and his witnesses. More cases are won or lost on this score than on any other. It is seldom that one can discover from reading a newspaper report whether any witness has been believed or not: and it is obviously fruitless to criticize a verdict that there has—or has not—been negligence without knowing what the judge believed to have happened. Only after he has resolved the facts can the judge decide whether there has been negligence, and in reaching this conclusion he is guided by the views of the expert witnesses called. Again, when there is conflict between the expert witnesses, it is for the judge to choose the one whose views he accepts.

Lord Justice Denning is reported to have said[3] that before the National Health Service Act the courts had been "very kind" to voluntary hospitals. The report suggests that Lord Justice Denning was implying that the great increase both in the number of cases brought against hospitals, and the number of successful cases, was at least in part attributable to the application of the strict rule of law to those cases now for the first time. It is the writer's view that this is a part only of the truth, and some additional suggestions are hazarded below.

The Changing Times

The taking over of hospitals under the National Health Service has brought about a radical change in the whole attitude of the patient towards hospitals. Many in the past have grumbled if they were not treated at hospital in every way as they would have wished, but yet respected the hospital and its staff. Some of this respect has now gone. With it has gone an inherent unwillingness on the part of patients and their legal advisers to institute proceedings against local hospitals. The attitude nowadays is that they are suing the "State." The jury, too, are members of the public, and, just as the patient is less hesitant to allege negligence, so are they less hesitant to believe it.

The passing into law of the Legal Aid and Advice Act, 1949, has made it possible for many people to bring actions which they could not previously have afforded. Who can blame a plaintiff for instituting proceedings in respect of injuries which he had undoubtedly received, when he thinks, as many do, that he is suing the State at the State's expense?

The public has in every aspect of life become increasingly "compensation-minded." It is not only claims against doctors and hospitals which have increased. There has been a steady rise in the number of all classes of case in which damages are claimed for personal injuries, whether these are sustained in road traffic accidents, at work, or otherwise. Many readers will remember in this connexion the increase in their motor insurance premiums.

The law of negligence has been seriously affected by the internal combustion engine. The lay public do not usually realize that a very high proportion of the time of the civil courts is taken up with claims for personal injury arising from road traffic accidents, and it is inevitable, therefore, that the influence of these cases on the law of negligence should have been marked. In most Continental countries a motor vehicle is treated as inherently dangerous, and if a driver injures someone it is for him to show that he was not negligent if he is to escape liability. In England this is not the law: the burden of proof of negligence is on the plaintiff, but if he can show that the driver has made an error the court will then hold that there has been negligence unless the driver can disprove it. Day after day, therefore, judges and barristers are concerned with cases in which error and negligence are closely approximated. It is hardly surprising that when they deal with another type of negligence case their application of the law will be influenced by this state of mind. Twenty-three years have passed since third-party insurance for motorists became compulsory: it will be seen, therefore, that this factor has had enough time now to have a significant effect.

New Potential Dangers

To venture on more controversial fields: few will deny that medicine and surgery have developed apace since, say, 1939. It is by no means impossible that this development has outstripped the improvement in the teaching of medical students and young doctors. To-day the practitioner in all spheres has a much wider and potentially more dangerous

[1] *Daily Telegraph*, March 16.
[2] Ibid., March 19.
[3] *The Times*, March 19.

range of treatment than his colleagues of 15 years ago. There is therefore much more scope for the occurrence of "inadvertent" results, which are really only the logical consequences of some procedure adopted by the doctor which he has not foreseen or been taught to avoid. The smallest mistake is now harder to retrieve or to counter than formerly, and its consequences are apt to be much more dire to the patient.

In medicine, as in all walks of life, there have always been a few who are careless. It would be surprising, after a world war and a social and medical revolution, if those inevitable few were not slightly less few. Nor would it be surprising if the very newness of the N.H.S. had put a few such people into the wrong jobs or had failed to weed them out. The newness of the N.H.S. organization appears in some cases to have also contributed to this problem in another way—namely, that the hospital machine has not always worked with complete smoothness. Situations of doubt and difficulty have arisen in which mistakes (mostly of inexperience) have been made.

The cause of the present circumstances lies not in the law but in its application, and its cure in the social and not the legal field. There can be no justification for the medical profession to ask for special protection beyond that which the law gives to others. What need is there for a Select Commission? If doctors continue to do their best at all times, if they uphold the traditions of the past, if they can manage to do their work without looking over their shoulders at the law, secure in the support of their defence organizations, the causes which are tilting the scales against them will vanish in time and the equilibrium will be restored.

Medical Notes in Parliament

INQUIRY INTO HEALTH SERVICE

The National Health Service was debated on May 18 on a Vote for the Civil Estimates.

Mr. ANEURIN BEVAN said that the Opposition took the gravest view of the decision of the Minister of Health to appoint a committee of inquiry into the Service. Why had not the Minister made use of the Central Health Services Council, which had an unsurpassed pool of knowledge?

The terms of reference made it clear why the Minister had not used the council. It would not be possible for the council in its own terms of reference to advise the Minister on the limitation of the Service. It would only be possible for them to advise on any defect in the administration and on any changes that should be made to repair those defects. The Minister was setting up an independent committee not because he was anxious to improve the administration but because he was anxious to obtain an alibi to cut the Service.

Stiffer Discipline

Demands on the Service in the two sections—dental and ophthalmic—where the patient initiated the expenditure had already begun to decline before charges were put on. The pharmaceutical side of the picture was slightly different. This was where the initiative on the expenditure lay mainly with the doctor. It was the doctor who, by his prescription, attracted money from the Exchequer. Here the expenditure had been and still was going up in spite of the prescription charge. But in this case there was disciplinary action open to the Minister, and there were administrative pressures which might be increased more severely than they had been. It surely was a reflection on the medical profession that in the case of "dexedrine" £400,000 was spent on it last year when the equivalent in the official formulary would have cost only £158,000. It was a reflection on the doctors, and what was required was not action to penalize the patient, who was not responsible, but to make an investigation into the profits made by the big drug houses and to stiffen more severely the discipline over the general practitioners.

The hospital organization should be looked at from the point of view of the treatment of the chronic sick with a view to relieving some of the charges on the hospitals.

Minister's Reply

Mr. IAIN MACLEOD, Minister of Health, said that two questions in relation to the inquiry had to be decided: Was there anything to inquire into, and, if so, who should undertake it? On some matters within the area of dispute he wanted advice, though he agreed that the decisions could be taken only by the House of Commons. One matter was the block grant. It was one view that the central accounting system of this country was never designed for the burden the Health Service had put upon it in the management of several thousand hospitals. That money unspent at the end of the financial year had to be returned was not an incentive to wise spending in the last few months of the year. By planning three or five years ahead, the hospitals could make great economies.

Ambulances were a hospital service in Scotland and a local authority service in England. Which system was the better? There was the immensely difficult problem of fitting national wage negotiations into the intensely human and personal hospital service. If savings could be effected without loss of efficiency, should not a hospital get the benefit of that economy? Had local authorities found their right role in the Health Service? There was a good case for some investigation after five years.

Then came the question of who should undertake it. Mr. Bevan had suggested the Central Health Services Council, but it was because that council was representative of all the interests in the Service that he did not regard it as the right body to undertake the inquiry. He desired an independent view from independent-minded people.

The case that there was something to be inquired into was unanswerable. Expenditure in the Health Service field could not be controlled unless man-power was controlled, because salaries and wages accounted for two-thirds of the cost of hospitals, and hospitals accounted for nearly two-thirds of the cost of the scheme. At the end of 1951 there were 328,000 full-time and 90,000 part-time staff in hospitals, an increase of respectively 15% and 33% over 1948. They must try to relate the numbers employed to the service obtained, and he hoped that as an outcome of the review more staff might be available for the hospitals and sanatoria which at present were in the greatest need.

Concern about Prescribing

The Government viewed the present cost of the pharmaceutical services, as did their predecessors, with the gravest concern. It was the only part of the National Health Service that he could not claim as under financial control at the present time. There had been a steady increase in the numbers of prescriptions, which were now running at the rate of 241 million a year in Great Britain. The average cost of a prescription had climbed from 38d. in 1949–50, to 40.5d., 47d., and 50.7d., and he had made an estimate of 52d. for each prescription for this year. This rise was due to a general rise in ingredient costs, though that was flattening out, and to the increasing use of new, valuable, and expensive drugs and to the important increase in the proportion of proprietaries. Before the Service came in the proportion of proprietaries was 6%. In 1949 it was 15%, and it was now 25%, which accounted for about half the drug bill; and the whole of the amount he had to pay out, taking into account the hospitals, was about £60m.

He was going to invite doctors in a month or so not to prescribe the drugs which Sir Henry Cohen's committee had referred to as not of proved therapeutic value. That would help the situation, but the biggest problem was that no fewer than 4,000 proprietaries came in the categories in which the Cohen committee advised they were not superior to standard proprietaries but which they thought ought to be prescribable subject to satisfactory price arrange-

ments being made. The problem that confronted him was what should be done. It was not a new problem. The House was recommended to take action over proprietaries first in 1914, and many efforts had foundered in the past. There was a genuine case for many of the firms, but the trouble was that there were firms who were merely wrapping up standard proprietaries in pretty packages and forcing them on the notice of doctors. And the difficulty was to distinguish between the two so that he would not harm the export industry or research, which had brought such splendid advances in chemotherapy, and to get rid of those firms that battened on the Service.

There were various possible approaches, but the Government had decided in the last few days to start a number of cost investigations—as many as they could undertake—into the cost of manufacture of certain of these proprietaries that seemed, at first sight, especially expensive. (Cheers.) He hoped it would yield substantial savings, and he intended to circulate doctors with the names of those proprietaries concerning which the Government was unable to reach satisfactory agreements on price. This action should not be taken to be the end of the story, and he did not rule out more drastic measures if this should fail.

Charges to Patients

As a result of the 1s. charge for prescriptions there was a drop of 14% in the first month. That came down, until in September the deterrent effect was ¼%. In the three months at the turn of the year December, January, and February, the number of prescriptions dispensed was running at about 12% above a year before, even though the 1s. charge was on. It was true there was fog, floods, and 'flu, and it was quite impossible to make any valid comparison from year to year unless one looked at the sickness figures of the Ministry of National Insurance. The past year had been one on which it was genuinely almost impossible to draw conclusions. But when he calculated his Estimates he had put down a deterrent figure of 6% for the coming year. Whether it would be right or wrong he could not tell, and it depended more than anything on whether there would be an epidemic year or not.

The main problem was how to meet the thrusting needs of the hospital service. Last year the hospitals under-spent by £14m. owing partly to the Government's requests to them not to over-spend. In this year's Estimates the Government had provided £15,250,000 for extra expenditure. Stocks carried by hospitals amounting to £21m. in March, 1952, were being reduced by £3m., which was additionally available to hospitals for the coming year. Cash balances were being reduced by £2m., and, adding these figures to the £15,250,000, there was provided £20m. over the out-turn for last year for the hospitals. With this £20m. he could maintain the Service, bring into full use the developments that had been finished recently, and provide for modest future development.

The policy of successive charges would in time destroy the Service. The Government had shunned a further step down that road. A "hotel charge" had never been discussed either by himself or his colleagues at any stage. It might be that they were at the end of charges; he did not know, but at least a halt had been called. He had tried, as he had shown in his Estimates, to hold the line, but many of the things he had done could not be repeated year after year. What they wanted to achieve was a system by which the Service had an interest in economy which was as natural and rewarding as was its interest in medical efficiency. They were right to review the Service, and the Guillebaud committee was the best method of carrying out the investigation.

Due for Review

Mr. F. MESSER said that the Service was due for review. Consultants who were members of teams of full-time consultants were now leaving to become sessional consultants. Travelling time was taken into account as part of the session, and they got income-tax allowances on all expenses. Among them were men now getting £2,000 or £3,000 a year who would have been lucky in the old service if they ever got £1,500. Surely there was a field for investigation.

Dr. S. JEGER said that the poor general practitioner had been the whipping-boy for what had been described as "unnecessary expenditure." It was true that some doctors, either through ignorance or malevolence, were not playing the game, and he had heard of one who prescribed a pound of cotton-wool a week for his barber, who used it round the necks of his customers. But some patients did not feel happy unless they were getting bottles of medicine to pour down their throats, which was one of the consequences of establishing a vested interest in patients.

Commander GALBRAITH, Under Secretary, Scottish Office, said that the Guillebaud committee would be able to study the merits of whole-time and part-time service but it would not be dealing with rates of pay. The differences between the English and Scottish services were in matters of administration, but so far as those differences had a bearing on expenditure it would be of advantage to have them reviewed.

An Opposition motion to reduce the Vote by £5 was defeated by 293 votes to 268

NURSING DUTIES

The hospital nursing services were debated in the House of Lords on May 12. Opening the debate Lord CROOK founded his case on the recent report of the Nuffield Provincial Trust and the evidence produced by its job analysis of the great misuse of nursing skill. He asked, in effect, for urgent Government consideration of the report and the adoption of as many as possible of its recommendations.

Lord MORAN thought it was generally agreed that they could not look for any great increase in the numbers of nurses in the future, and therefore attention must be concentrated on making the best use of existing numbers.

Nursing Orderlies

He hoped the nursing profession would give careful attention to the use of the orderly. If an orderly was trained for a year he would be a most useful pair of hands. If there were enough trained nurses, they should be taken to the bedside; but in the present scarcity there was no option but dilution of the nursing profession.

Lord AMULREE supported the idea that some form of dilution was the only way out. The danger seemed to be that too many nurses were being trained to too high a standard. It had always seemed to him a pity to make the trained nurses' standard too high. The nurse so trained looked for an administrative job. No other would give her an increased salary.

Lord HADEN-GUEST regarded "inevitable dilution" as a defeatist argument. There was already far too much dilution in the nursing profession.

Need to Reorganize

Lord WOOLTON replied to the debate. He said there were some good points in the picture. The nursing force had increased by two and a half times in the past 50 years, so some progress was being made. The demand had increased even more, but that was also a sign of progress—more care was being taken of the sick. He gave an assurance on the Nuffield report. It was received by the Minister of Health at the beginning of April, and the advisory committee met on April 29 to consider it. The Minister was anxious that no time should be lost. He endorsed the importance given in the Nuffield report to the need for reorganization of hospital services. He had been horrified to find, in talks with the nurses, that promotion went in the line of administration. At the time he was thinking very little of administration. It was a great pity if highly trained nurses were having to do clerical work, which involved an entirely different capacity and attitude of mind. The things that ought to be looked at were what reorganization could be obtained in personnel employed in administration and also in the fuller use of orderlies.

ANTIBIOTICS BILL

The Therapeutic Substances (Prevention of Misuse) Bill was discussed by the House of Commons on Second Reading on May 13.

Mr. IAIN MACLEOD explained that the purpose of the first of the two clauses was to extend the scope of the Penicillin Act, 1947. It was right to ask for powers to make regulations, similar to those made under the 1947 Act, in respect of any substance which appeared to him and the other Health Ministers to be capable of causing danger to the health of the community. Isoniazid was the drug which had given rise to Clause 1. It was necessary they should consult the Medical Research Council, and questions had been raised whether he would also consult the manufacturers and other interests affected. He stated that there would be such consultations, provided it was understood that the final decision must be taken on medical grounds.

Clause 2 was popularly known as the "penicillin for pigs" clause. It had been found by experiment in the United States that minute quantities of antibiotics put into the feedingstuff could have a most remarkable effect in encouraging the growth and fattening of pigs. The first consideration was whether this could have any ill effects on human beings who would eat the meat produced, but he was assured by the Agricultural Research Council that there was not the slightest danger of this happening. The other danger which was being guarded against was the possibility by this wider use of antibiotics of a black market in penicillin, but the Government would take steps to ensure that the antibiotics were used in such a way that they could not be extracted and used for self-medication.

At the moment it was proposed to apply these regulations only to penicillin, since that was the only substance of this class of which there were satisfactory quantities, but it was possible that in the future aureomycin and perhaps terramycin would be manufactured in sufficient quantities in this country if they were suitable for use in the same way. He would consult the Agricultural Research Council and, if necessary, the Royal College of Veterinary Surgeons.

Danger of Sterility

Captain J. A. L. DUNCAN, a member of the council of the Royal College of Veterinary Surgeons, said that the use of such drugs for fattening pigs for slaughter might be all right, but farmers should be warned that if they were used for feeding pigs for breeding there was a danger of loss of fertility. The same applied to cattle and sheep for breeding. He sought an assurance that the Royal College of Veterinary Surgeons would be consulted.

Mr. G. R. H. NUGENT, Parliamentary Secretary to the Ministry of Agriculture, gave the assurance that there would be consultations with the College on many matters, and that these were already in progress on the drafting of the regulations.

The Bill was read a second time.

Synthetic Detergents Investigation

Mr. H. MACMILLAN, Minister of Housing and Local Government, announced on May 18 that he had appointed a committee "to examine and report on the effects of the increasing use of synthetic detergents and to make any recommendations that seem desirable, with particular reference to the functioning of the public health services." Its chairman is Sir Harry Jephcott, F.R.I.C., chairman and managing director of Glaxo Laboratories. Among its 17 other members are the following medical men: Dr. N. R. Beattie, principal medical officer, Ministry of Health; Professor J. C. Cruickshank, professor of bacteriology as applied to hygiene at the London School of Hygiene and Tropical Medicine; and Lieutenant-Colonel E. F. W. Mackenzie, director of water examination, Metropolitan Water Board.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **May 2** (No. 17) and corresponding week 1952.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1953 Eng. & Wales	1953 Lond.	1953 Scot.	1953 N. Ire.	1953 Eire	1952 Eng. & Wales	1952 Lond.	1952 Scot.	1952 N. Ire.	1952 Eire
Diphtheria	13	1	3	0	1	35	4	6	0	2
Dysentery	466	34	82	2	1	275	35	44	1	
Encephalitis, acute	7	0	0	0		6	0	0	0	
Enteric fever:										
Typhoid	0	0	0	0		0	0	0	1	1
Paratyphoid	6	1	1 (B)	0	1 (B)	8	0	0	0	2 (B)
Food-poisoning	86	15		0		123	5		0	
Infective enteritis or diarrhoea under 2 years				24	20				12	16
Measles*	10,752	419	427	336	203	6,137	275	769	276	446
Meningococcal infection	32	3	12		3	40	3	13	2	1
Ophthalmia neonatorum	29	3	19	0		49	4	12	0	
Pneumonia†	549	28	212	7	2	747	47	266	8	2
Poliomyelitis, acute:										
Paralytic	19	4	1	0	1	22	3	3	0	1
Non-paralytic	10	1				7	0			
Puerperal fever§	226	30	16	1		281	35	16	0	1
Scarlet fever	1,139	69	180	52	75	796	54	141	12	55
Tuberculosis:										
Respiratory			194	31				148	37	
Non-respiratory			39	5				26	1	
Whooping-cough	3,373	239	452	42	120	2,946	163	235	113	62

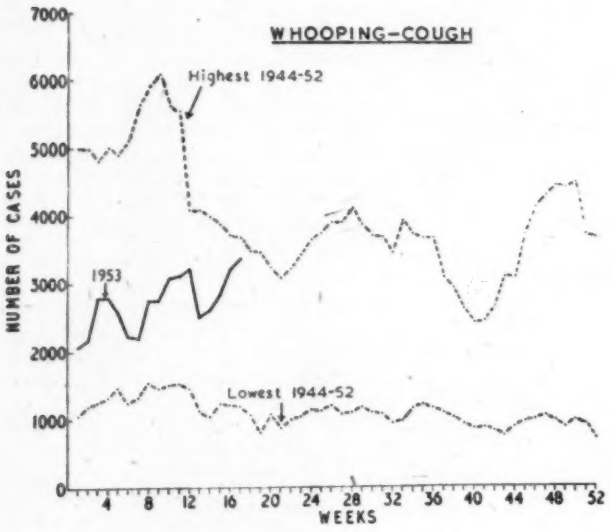
DEATHS in Great Towns	1953 Eng. & Wales	1953 Lond.	1953 Scot.	1953 N. Ire.	1953 Eire	1952 Eng. & Wales	1952 Lond.	1952 Scot.	1952 N. Ire.	1952 Eire
Diphtheria	0	0	0		0	1	0		0	0
Dysentery	0	0				0	0		0	
Encephalitis, acute		0			0		1			0
Enteric fever	0	0	0			0	0		0	
Infective enteritis or diarrhoea under 2 years	8	2	2	3	3	5		4	0	1
Influenza	21	2	1	0	1	17	4	5	0	0
Measles		0	0		1		0		0	3
Meningococcal infection		0	1				0	1		
Pneumonia	203	34	22	10	2	241	26		10	7
Poliomyelitis, acute	1	0			0	2	0			0
Scarlet fever		0	0		0		0		0	0
Tuberculosis:										
Respiratory	121	13	12	3	9	133	19	19	2	10
Non-respiratory		5	1	3	2		1	3	0	1
Whooping-cough	1	0	2	0	0	4	0		0	0
Deaths 0–1 year	202	28	30	11	10	224	21	45	7	28
Deaths (excluding stillbirths)	5,047	691	562	98	171	5,129	744	620	113	202
LIVE BIRTHS	7,849	1125	929	243	375	8,092	1227	973	243	450
STILLBIRTHS	224	27	33			204	27	25		

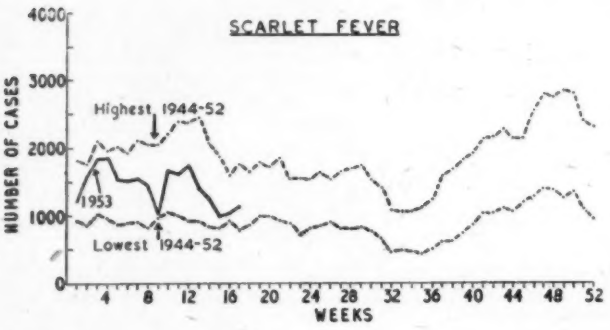
* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

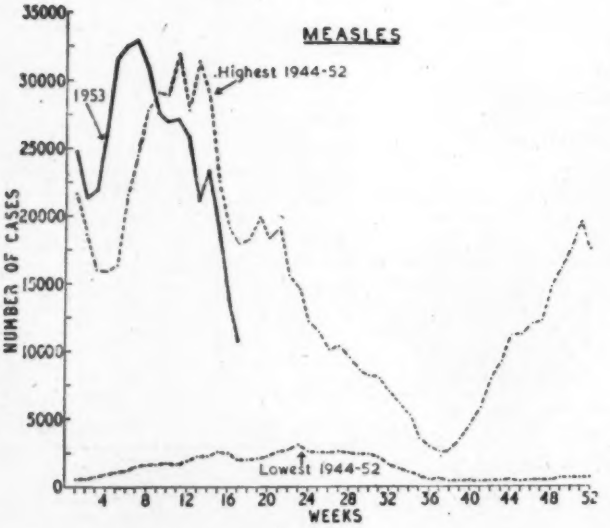
Vital Statistics

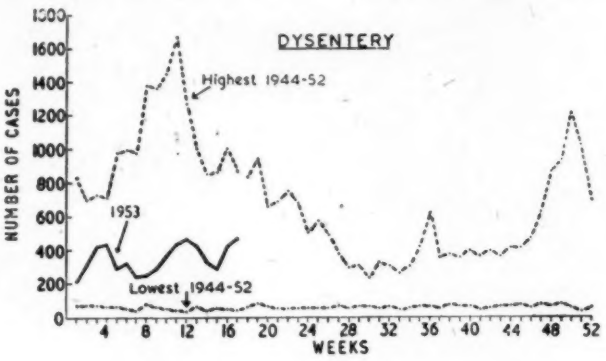
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the nine years 1944–52 are shown thus - - - - - - -, the figures for 1953 thus ————. Except for the curves showing notifications in 1953, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









Week Ending May 9

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,387, whooping-cough 3,461, diphtheria 22, measles 9,809, acute poliomyelitis 38, dysentery 729, paratyphoid fever 14, and typhoid fever 1.

Infectious Diseases

The largest variations in the number of notifications of infectious diseases in England and Wales during the week ending May 2 were decreases of 2,979 for measles, from 13,731 to 10,752, and 132 for acute pneumonia, from 681 to 549, and increases of 167 for whooping-cough, from 3,206 to 3,373, and 92 for scarlet fever, from 1,047 to 1,139.

The largest falls in the incidence of measles were 267 in Yorkshire West Riding, from 1,317 to 1,050; 256 in Surrey, from 736 to 480; 210 in London, from 629 to 419; and 204 in Warwickshire, from 528 to 324. The largest fluctuations in the trends of whooping-cough were a rise of 46 in Kent, from 85 to 131, and a fall of 48 in Lancashire, from 497 to 449. Only small variations were recorded in the local returns of scarlet fever. 13 cases of diphtheria were notified during the week, 12 fewer than in the preceding week.

29 cases of acute poliomyelitis were notified—15 fewer for paralytic and 3 more for non-paralytic cases than in the preceding week. The largest returns were London 5; Southampton County 4 (Portsmouth C.B. 3); and Middlesex 4.

A rise in the notifications of dysentery from 419 to 466 was recorded during the week. The largest centres of infection were Lancashire 114 (Liverpool C.B. 35, Preston C.B. 22, Manchester C.B. 17); Middlesex 70 (Edmonton M.B. 26, Southgate M.B. 13); Essex 35 (West Ham C.B. 12); London 34 (scattered through 12 boroughs); Bedfordshire 28 (Bedford M.B. 17); Yorkshire North Riding 26 (Middlesbrough C.B. 26); Norfolk 23 (Great Yarmouth C.B. 21).

Smallpox in the North Country

The number of confirmed cases reported up to noon, May 19, is 30, including 8 deaths. No new cases have been reported since last week. Although the period of surveillance of known contacts is almost expired, the need for special vigilance must continue for a longer period, because the source of infection of 4 cases which occurred two to five weeks ago is uncertain.

In its first large-scale effort to raise funds for promoting various projects, the National Spastics Society is offering Coronation seals for sale at 1d. each. So far 2,250,000 seals, which show a picture of Westminster Abbey, have been printed for distribution. Supplies of seals may be obtained from the Appeals Secretary, National Spastics Society, 44, Stratford Road, London, W.8.

Medical News

The Committee of Inquiry on the Rehabilitation of Disabled Persons which was set up by the Minister of Labour and National Service, the Minister of Health, and the Secretary of State for Scotland, under the chairmanship of Lord Piercy, is now ready to receive evidence from interested persons and organizations. Those intending to give evidence should give notice as soon as possible to the joint secretaries of the committee (32, St. James's Square, London, S.W.1), with a memorandum of the views they wish to present.

Courage Laboratories of Ophthalmology.—At the Royal Eye Hospital, London, on May 13, Mrs. M. V. Courage laid the foundation stone of new laboratories which are to be known as the Courage Laboratories of Ophthalmology. They will be used for clinical research under the direction of Professor Arnold Sorsby. The Bishop of Kingston (The Rt. Rev. F. O. T. Hawkes) reminded those present at the ceremony of the large amount of good work which the firm of Courage and Company, Limited, had done for the Royal Eye Hospital: a few years ago they presented a nurses' home at Surbiton, and now they had come forward with the necessary funds to build these laboratories in the hospital precincts. The research department of the Royal Eye Hospital had been in existence for ten years, and immense benefit was hoped for with the new facilities which the laboratories would provide.

Chelsea Clinical Society.—The Annual Dinner of the Chelsea Clinical Society was held at the South Kensington Hotel on May 12 with the president, Mr. Eric Steeler, in the chair. The toast of the Society was proposed by the Very Reverend Archimandrite James Virvos, Provost of the Greek Cathedral, who engagingly found a similarity between the present dinner and the feasts of good fellowship which were facilitated by the nature of the Greek vineyards in the time of Hippocrates. There was much in common between the two civilizations of Greece and Britain. His ancestors, the Archimandrite continued, had deified Asklepios, whose daughter was Hygieia. Greece became the cradle of the scientific development of medicine, and in early Greece the doctor had become a distinct person from the priest doctor. In response Mr. Steeler welcomed this opportunity to pay tribute to a country which had made such fundamental contributions to medicine. The toast of the guests was proposed by Mr. David N. Matthews, and Sir Ernest Gowers and Sir Cecil P. G. Wakeley spoke in response. At the close of the evening Mr. Steeler inaugurated the new president, Dr. J. N. Loring.

Society of Endocrinology.—The following officers have been elected: *chairman,* Dr. S. J. Folley, F.R.S. ; *hon. secretaries,* Professor C. H. Gray and Professor N. F. Maclagan ; *hon. treasurer,* Professor G. W. Harris, F.R.S. ; *editor of Society's Proceedings,* Professor S. Zuckerman, F.R.S. *Ordinary members of committee :* Dr. T. Mann, F.R.S., Dr. C. J. O. R. Morris, Dr. I. W. Rowlands, and Dr. S. L. Simpson. Communications should be addressed to the hon. secretary, at the Department of Chemical Pathology, King's College Hospital, Denmark Hill, London, S.E.5.

Scientific Film Review.—This is a new quarterly review of scientific and medical films, prepared by the appraisal panels of the Scientific Film Association and published by the British Film Institute. The first issue published last month contains appraisals of 17 new films, two of which are medical. Specimen copies of the review can be obtained on application to the general secretary, Scientific Film Association, 164, Shaftesbury Avenue, London, W.C.2.

Toxicity of Industrial Solvents.—The Medical Research Council has published a revised edition of Industrial Health Research Board Report No. 80, "Toxicity of Industrial Organic Solvents." The revision has been carried out by Dr. Ethel Browning, who prepared the original report in 1937, under the general guidance of the Council's toxicology committee. The book will be invaluable to all industrial medical officers: it summarizes available information on the properties, use, and toxicity of 126 solvents in general use in industry. Each section of the book is completed by an extensive bibliography up to 1948, and there is a general index. (Pp. 411. Price 35s. net from H.M.S.O., York House, Kingsway, London, W.C.2.)

Examiners for F.F.A. R.C.S.—In our advertisement columns this week the Faculty of Anaesthetists of the Royal College of Surgeons invites applications for the appointment of examiner for the F.F.A. R.C.S. The subjects in which examiners are required are, for the primary examination, anatomy, physiology, pathology, and pharmacology, and, for the final examination, medicine, surgery, and anaesthetics.

Nepal has been admitted a Member State of the World Health Organization.

Léon Bernard Prize.—The Sixth World Health Assembly awarded the Léon Bernard Prize to Dr. Johannes Frandsen, director-general of the National Health Service of Denmark, on May 11. The prize is given for his outstanding achievement in the field of social medicine in his own country. Dr. Frandsen has directed the Danish Health Service since 1928.

Anglo-French Exchange Bursaries.—The following have been awarded bursaries for special studies in France, under the exchange scheme announced in the *Journal* on January 17 (p. 169) : Mr. F. B. Cockett, senior lecturer in surgery, St. Thomas's Hospital; Dr. R. H. Gorrill, senior lecturer in bacteriology, St. Mary's Hospital Medical School; Dr. A. Macdonald, reader in bacteriology, Liverpool University; Mr. A. McPherson, 1953 Laming-Evans Research Fellow of the Royal College of Surgeons; Dr. J. W. F. Scrimgeour, senior obstetric registrar, Manchester; and Dr. E. C. Turton, tutor in electroencephalography, Bristol University.

Sir Daniel Davies has been created a Knight Commander of the Order of St. Sylvester by the Pope, for his services to the Roman Catholic Church. Particular mention is made of his services to Cardinal Griffin and to the Hospital of St. John and St. Elizabeth, St. John's Wood, London.

Surgeon Captain J. G. Holmes has been awarded the Gilbert Blane Medal by the Royal College of Surgeons of England for his work in the promotion of naval medical science and hygiene. The medal was founded in 1830 by Sir Gilbert Blane, F.R.S., who is best known for the sanitary reforms he introduced to prevent scurvy in the Navy.

Mr. David N. Matthews, vice-president of the British Association of Plastic Surgeons, is spending a week at Düsseldorf, lecturing and operating at the West German Plastic Centre. Dr. J. D. Ebsworth is accompanying him, to give the anaesthetics.

Dr. Bertram Mann, a consultant chest physician at Halifax, has been awarded a N.A.P.T. exchange scholarship to Canada. He will go there in September to study methods of tuberculosis control for three months.

Dr. J. R. Macintyre has been appointed a nominated member of the Executive Council of St. Helena.

COMING EVENTS

Bart's Coronation Ball.—The Coronation Ball of St. Bartholomew's Hospital is being held at the Royal Festival Hall on June 12 from 11 p.m. to 5 a.m. Tickets (£2 10s. double) are obtainable from the Ball Secretary, Abernethian Room, St. Bartholomew's Hospital, E.C.1.

United Hospitals Festival Choir.—A Coronation Concert is to be held on June 24 at the Royal Festival Hall at 7.45 p.m., when the Choir, accompanied by the London Symphony Orchestra, will give a performance of "The Messiah." Tickets (price 12s. 6d., 10s., 7s. 6d., 5s., and 3s. 6d.) are obtainable from the Royal Festival Hall Box Office.

Simpson Smith Lecture.—Sir Clement Price Thomas will deliver the Simpson Smith Lecture on June 11 at the Medical Society of London, 11, Chandos Street, Cavendish Square, London, W.1, at 4.30 p.m. His subject will be "Benign Tumours of the Lung."

St. Cyres Lecture, 1953, will be delivered by Professor J. McMichael in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole Street, W.1, on June 12 at 5 p.m. His subject will be "Right Ventricular Failure."

National Association for Maternity and Child Welfare.—The annual conference will be held at St. Pancras Town Hall, Euston Road, London, N.W.1, from June 10 to 12. The theme will be "Education for Parenthood." The speakers will include Dr. Jean Mackintosh, Dr. John Burton, and Dr. Catherine Crane. Tickets (price £1 1s.) may be obtained from the secretary, N.A.M.C.W., Tavistock House North, London, W.C.1.

NEW ISSUES

British Journal of Preventive and Social Medicine.—The next issue (Vol. 7, No. 2) will be available in a week's time.

Journal of Clinical Pathology.—The next issue (Vol. 6, No. 2) will be available in a week's time.

These journals are issued quarterly. In each case the annual subscription is £2 2s., single copy 12s. 6d.

Abstracts of World Medicine.—The May issue (Vol. 13, No. 5), which is now available, contains abstracts of important papers on both medical and surgical subjects drawn from the medical literature of some 20 different countries and of all five continents. In addition to clinical medicine and surgery, the subjects covered include pathology, bacteriology, pharmacology, and chemotherapy, and there are also sections dealing with medical genetics, public health and industrial medicine, toxicology, anaesthetics, radiology, and the history of medicine.

Issued monthly; annual subscription £4 4s., single copy 8s. 6d.; a specimen will be sent free on request.

The above journals and *Abstracts of World Medicine* are obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Applications should be made first to the institution concerned.

Monday, May 25

EDINBURGH UNIVERSITY.—At University New Buildings, 5 p.m., Dr. Douglas Guthrie: Witchcraft and Witch-Doctors.

ST. ANDREWS UNIVERSITY.—At Physiology Department, Dundee, 5 p.m., Dr. Irving S. Wright: Observations in Peripheral Vascular Disease.

Tuesday, May 26

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. D. I. Williams: Erythrodermias.

●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Chelsea Hospital for Women, 4.30 p.m., Dr. A. H. Harkness: Non-specific Infections in Male and Female.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—3.45 p.m., Imperial Cancer Research Fund Lecture by Professor G. Hadfield: Hormones and Human Breast Cancer.

ROYAL EYE HOSPITAL.—5 p.m., Mr. T. M. Tyrrell: Traumatic Surgery of the Eye and Adnexa.

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School.—5 p.m., Almroth Wright Lecture by Professor C. L. Oakley: Site of Production of Antibodies.

Wednesday, May 27

EUGENICS SOCIETY.—At Royal Society, 5.30 p.m., Professor D. Baird and Miss E. M. Scott, M.A.: Intelligence and Childbearing.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. H. Haber: Clefts, Vesicles, and Bullae.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Brigadier J. S. K. Boyd, F.R.S.: Phage Typing in Epidemiological Investigation.

ROYAL EYE HOSPITAL.—5.30 p.m., Mr. L. H. Savin: Ophthalmic Neurology.

Thursday, May 28

EDINBURGH UNIVERSITY.—At University New Buildings, 5 p.m., Dr. Douglas Guthrie: Ancient Drugs and Modern Remedies.

EPSOM AND SUTTON INTER-HOSPITAL PSYCHIATRIC ASSOCIATION.—At Belmont Hospital, Sutton, 8 p.m., Dr. A. S. Thorley and Dr. W. W. Kay: Prolonged Deep Coma; Dr. L. Minski: Legislation and the Aggressive Psychopath; Dr. C. C. Evans: Recent Advances in Electro-encephalography.

●HAMPSTEAD GENERAL HOSPITAL.—3 p.m., Dr. Una C. Ledingham: Common Mistakes in General Practice; 4.15 p.m., Mr. J. C. R. Hindenach: Pain in Shoulder and Arm.

INSTITUTE OF CHILD HEALTH.—5 p.m., Professor S. van Creveld (Amsterdam): Clinical Significance of New Clotting Factors.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. I. W. Whimster: Developmental Anomalies, Hyperplasias, and Tumours of Neuro-ectodermal Derivatives in the Skin.

NUFFIELD ORTHOPAEDIC CENTRE, Wingfield-Morris Orthopaedic Hospital.—8.30 p.m., Dr. A. X. Cavadias: The Vasculature of Bone and the Healing of Fractures: An Experimental Study.

●POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Professor R. V. Christie: Chronic Bronchitis and its Complications.

ROYAL EYE HOSPITAL.—5.30 p.m., Miss M. Savory: Ocular Tumours.

ST. ANDREWS UNIVERSITY.—At Physiology Department, Dundee, 5 p.m., Professor Z. M. Bacq (Belgium): Chemical Protection against Ionizing Radiation; Therapy of Radiation Sickness.

Friday, May 29

INSTITUTE OF DERMATOLOGY.—5.30 p.m., clinical demonstration by Dr. G. B. Dowling, Dr. P. D. Samman, and Dr. J. E. M. Wigley.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY.—3.30 p.m., discussion for general practitioners by Mr. W. S. McKenzie: Indications for Tonsillectomy.

LEEDS REGIONAL PSYCHIATRIC ASSOCIATION.—At Oulton Hall, near Wakefield, 3 p.m., Dr. J. Valentine: Plans for Mental Health in the Region.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Professor C. F. W. Illingworth: Bleeding Peptic Ulcer.

●POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. Patricia Benedict (Boston): Amenorrhoea, Types and Diagnosis.

ROYAL EYE HOSPITAL.—5.30 p.m., Professor C. A. Keele: Local Anaesthetics.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—5 p.m., Obstetric and Gynaecological Conference on Puerperal Infection. Speakers, Dr. Melvin Ramsay and Professor Robert Cruickshank.

APPOINTMENTS

DAVIES, D. J., M.B.E., M.D., D.P.H., County Medical Officer of Health and School Medical Officer, Pembrokeshire.

FRANCIS SYDNEY GRAHAM MCKENZIE, M.B., Ch.B., Medical Superintendent, Royal Infirmary, Edinburgh.

FORSTER, ALBERT, M.B., B.S., D.P.H., Medical Officer of Health, Chester-le-Street Urban and Rural District Councils; Area Medical Officer, Durham County Council.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD.—L. S. A. Boothroyd, M.B., B.S., F.R.C.S., Surgical Registrar, Taunton and Somerset Hospital; A. G. Moffoot, M.B., Ch.B., F.R.C.S., Surgical Registrar, Royal Cornwall Infirmary, Truro; R. R. Knowles, M.B., B.S., D.P.M. (Part I), Registrar in Psychiatry to South-western Region (Bristol Mental Hospitals); E. W. Hughes, M.D., M.R.C.P., Resident Physician, Tehidy Chest Hospital, Camborne, Cornwall; J. M. Large, M.B., Ch.B., F.R.C.S.Ed., Senior Surgical Registrar to Thoracic Unit at Hawkmoor Chest Hospital, Bovey Tracey, Devon; L. S. A. Boothroyd, M.B., B.S., F.R.C.S., Senior Surgical Registrar, Exeter Clinical Area.

THOMAS, D. VERNON, B.Sc., M.B., B.Ch., D.A., Deputy Director of Anaesthesia, Strong Memorial Hospital, and Associate Professor of Anaesthesia, University of Rochester School of Medicine, Rochester, New York.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Crawford.—On May 9, 1953, at the Jessop Hospital for Women, Sheffield, to Dr. Barbara (formerly Moore), wife of Dr. Colin K. Crawford, a son.

Hotchkis.—On May 13, 1953, at Aberfeldy Cottage Hospital, Perthshire, to Jean, M.B., Ch.B. (formerly Smout), wife of Alistair Hotchkis, Balgowan, Pitlochry, Perthshire, a daughter.

Price.—On April 24, 1953, at The London Hospital, London, E., to Vina, wife of Dr. J. L. Price, a daughter—Susan Vina.

Stewart.—On May 11, 1953, at Beech Hill Nursing Home, Barnstaple, Devon, to Eunice, M.B.E., wife of P. B. Stewart, D.F.C., M.B., M.R.C.P., a son.

MARRIAGES

Moos—Jungalwalla.—On May 22, 1953, at Kensington, London, W., Jamshed Sorab Moos, M.D., M.R.C.P., to Perin Kaikobad Jungalwalla, M.B., B.S., D.T.M.&H.

Turner—Dence.—On May 9, 1953, at Tunbridge Wells, Kent, Winston M. L. Turner, M.D., M.R.C.P., to Helen M. Dence, M.R.C.S., L.R.C.P.

DEATHS

Cook.—On April 15, 1953, at Lyme Regis Hospital, Dorset, Philip Nield Cook, M.B., B.S.

Eadham.—On March 30, 1953, Joseph Eli Ellison Eadham, M.B., F.R.C.S.Ed., of Sleaford, Lincs.

Fell.—On April 19, 1953, at St. Mary's, Colchester, Essex, Alfred Nolan Fell, M.D., aged 75.

Hall.—On March 30, 1953, at 4, Shooters Hill Road, Blackheath, London, S.E., Sydney Octavius Hall, L.R.C.P.&S.Ed., L.R.F.P.S., Lieutenant-Colonel, R.A.M.C., retired.

Haslett.—On April 11, 1953, at Brookmeadow, Budleigh Salterton, Devon, Robert Woods Haslett, M.B., F.R.C.S.I.

Kent.—On March 30, 1953, at 3, Park Court, Barry, Glam, Percy Wheeler Kent, M.R.C.S., L.R.C.P., D.P.H.

Lee.—On March 29, 1953, John Robert Lee, O.B.E., M.D., F.R.C.S., of 39, Harley Street, London, W., late of Melbourne, Australia, aged 79.

Lund.—On March 24, 1953, at Cowper Cottage, Mundesley, Norfolk, Kenneth Fraser Lund, M.B., aged 82.

Massingham.—On March 31, 1953, at Lilac Cottage, Biddenden, Kent, Richard Massingham, M.R.C.S., L.R.C.P.

Metcalf.—On April 2, 1953, at Moor Lane, Sherburn-in-Elmet, Yorks, George Frederick Metcalf, L.M.S.S.A., aged 45.

Moorhead.—On March 21, 1953, at Truro, Cornwall, Robert Leishman Moorhead, M.B., C.M., of Birch Green, Haywards Heath, Sussex.

Morris.—On April 17, 1953, Dennis Morris, M.R.C.S., L.R.C.P., of 671, Romford Road, London, E., and Bedford, aged 27.

Robinson.—On March 29, 1953, at Whitley Bay Rest Home, 4, Camp Terrace, North Shields, Amy Robinson, M.D., aged 73.

Simpson.—On February 18, 1953, in a nursing-home, Reading, Berks, Lilian Gertrude Simpson, L.R.C.P.&S.Ed., L.R.F.P.S.

Soden.—On March 31, 1953, at The Little House, Ditchling, Sussex, Wilfred Newell Soden, M.C., M.D.

Stocks.—On March 24, 1953, at Ash Lea, Silverdale, Carnforth, Lancs, William Percy Stocks, F.R.C.S., formerly of Withington, aged 89.

Tandy.—On March 24, 1953, at 128, Shorncliffe Road, Folkestone, Kent, Oswald Cornwallis Stratford Tandy, M.B., Ch.B., D.P.H., aged 67.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Swine Erysipelas in Man

Q.—*Can swine erysipelas infect man? What treatment is advised?*

A.—The human equivalent of swine erysipelas is fairly common in butchers and others who handle material from infected animals. It is known as "erysipeloid," the name given to it by Rosenbach, although it was described and named "erythema serpens" by Morrant Baker many years earlier. The lesion is almost invariably on a finger or the hand, and resembles streptococcal erysipelas only in the fact that the skin is raised, indurated, and reddened. The colour differs, that of erysipeloid being a darker bluish-red, and extension proceeds much more slowly. The affected skin has a smooth shiny surface, and, owing to its thickening, the edge of the lesion is raised above the level of the surrounding skin. It produces a burning sensation with pronounced itching. If untreated, the disease may extend considerably and persist for weeks. It is rarely serious, but a complicating endocarditis, as in the pig, has been recorded, and arthritis is also said to occur. Isolation of the causative organism is difficult unless tissue is excised for cultivation, but those familiar with the disease have no difficulty in diagnosing it on clinical grounds. *Erysipelothrix rhusiopathiae*, the causative organism, is highly sensitive to penicillin, the administration of which is curative.

When to Operate on Internal Haemorrhoids

Q.—*What are the indications for operation in cases of internal haemorrhoids? A patient has had three injections and still bleeds from her piles. What is advised?*

A.—In cases of internal haemorrhoids prolapse is the chief indication for operation; continued bleeding at stool, despite adequate injection treatment, will also necessitate operation.

Most patients who are troubled only by bleeding are relieved by submucous injections of 5% phenol in almond oil. If, however, at the initial examination there is tendency to prolapse (i.e., the rectal mucosa can be made to appear by either drawing the perianal skin outwards or getting the patient to strain down), relief is likely to be only temporary. In cases with prolapse the longitudinal muscle of the rectum is stretched, and the submucous fibrosis produced by injection cannot correct this, although it may relieve bleeding.

In the case in question it is important to be sure that the blood is coming from the haemorrhoids. Presumably a preliminary sigmoidoscopy was done. This should be a routine investigation in all such cases. If there is any doubt about the source of the bleeding sigmoidoscopy should be repeated, and, if necessary, followed by a barium enema examination. If there is no doubt about the diagnosis, then it may be that the injections have not been adequate. Apart from actual relief of symptoms, a satisfactory injection result is indicated by palpable induration at the site of injection, as well as difficulty both in inserting the needle into the submucous space and in injecting more phenol, when the patient is re-examined after a fortnight. In the absence of such findings further injection must be considered. In the textbooks it is frequently stated that 1 to 3 ml. should be injected above the site of each haemorrhoid; but in practice it is common for the expert proctologist to use as much as 10 ml. at a time at each site. Most authorities would agree, however, that it is unwise to inject more than 20 ml. in all at any one session. If thorough injection fails, then operation may be necessary.

Oestrogens and Vasomotor Rhinitis

Q.—*Are oestrogens effective in cases of vasomotor rhinitis? A patient whom I have been treating for menopausal symptoms with dienoestrol has been completely relieved of long-standing severe nasal congestion.*

A.—I know of no evidence that oestrogens have proved effective in the treatment of vasomotor rhinitis. Indeed, one would suspect that, theoretically, they should exaggerate the condition. Like other steroid hormones, such as deoxycortone, they lead to retention of water and salt. This is especially noticeable in connexion with the "sexual skin" (of the vulva and perineum) of monkeys, which becomes markedly oedematous during the oestrus phase of the ovarian cycle. Oestrogens have been employed, and in some instances success has been claimed, in the treatment of *atrophic* rhinitis. Here it is argued that the nasal mucosa may be a female secondary sex organ—hence epistaxis as a sign of "vicarious menstruation"—and that the atrophic nasal mucosa may resemble the post-menopausal atrophic vaginal mucosa, which can be stimulated by oestrogens to show proliferative changes. Vasomotor rhinitis is often an allergic manifestation, and there is evidence that it responds to A.C.T.H. or cortisone therapy.

Food Value of Ice-cream

Q.—*What is the composition and food value of the commoner forms of ice-cream sold in this country?*

A.—Ice-cream considered as typical in the technical literature is said to contain 3.8 g. of protein, 12.6 g. of fat, and 19.6 g. of carbohydrate per 100 g. of the moist material, which adds up to a total of 207 calories. A typical commercial mix in the dry state could be made up with 40% of full cream dried milk, 45% of fat and sugar combined, 10% of soya flour, and 5% of various "food additives," such as glyceryl monostearate and the seaweed products agar and sodium alginate. The "food additives" are needed to make the ice-cream smooth and stable; by applying them skilfully it is possible to make a saleable product with a low percentage of fat, which is the most expensive constituent. Ice-cream made from dried milk and containing a good proportion of fat is certainly a highly nourishing form of food. Its use can be criticized only when its purchase uses up money which would otherwise be devoted to buying milk or other cheaper dairy products. In ice-cream of poor quality additional cereal products, such as wheat-flour and oat-flour, are sometimes included in place of the dried milk, which reduce the nutritive value of the product as a source of animal protein. Water ices, made of flavoured fruit juice, or artificial substitutes, have practically no nutritive value, but they are readily distinguishable from ice-cream. Some proprietary forms of ice-cream give a frothy fluid on melting, which suggests that the mixture is whipped up with air to give as much bulk as possible in the frozen state.

Aëdes Albopictus and Yellow Fever

Q.—*Is Aëdes albopictus a potential vector of yellow fever? Has it been found naturally infected, or has it been only artificially infected under laboratory conditions?*

A.—*Aëdes albopictus* may be classed as a potential vector of yellow fever because, in addition to a number of other culicine mosquitoes, it has been proved to be capable of transmitting the virus by its bite. The evidence, however, is from laboratory experiments, not from the discovery of natural infections. In 1929, Dinger, Schüffner, Snijders, and Swellengrebel obtained *A. albopictus* from Java, and in their laboratory at Amsterdam were able to transmit yellow fever virus from monkey to monkey by the bite of this

mosquito.[1] More recently (in 1943) Schüffner[2] repeated the transmission and noticed that the virus became attenuated when passed by *A. albopictus*, so that mortality among the infected monkeys dropped from 100 to 20%.

REFERENCES

[1] Kumm, H. W. (1931). The Geographical Distribution of the Yellow Fever Vectors. Baltimore, *American Journal of Hygiene Monograph Series.*
[2] Nauck, E. G., *et al.* (1948). *FIAT Review of German Science, 1939-1946: Tropical Medicine and Parasitology*, p. 138.

Epidural Analgesia

Q.—*What are the principal indications for sacral epidural analgesia?*

A.—Sacral epidural injections of local analgesics are made for three main reasons. First, the procedure is carried out to produce analgesia for operations on the perineum or in the pelvis, although there is no reason why, if sufficient local analgesic is injected, the operation should not be anywhere in the body below the first cervical nerve root. Epidural analgesia is held to have advantages over spinal analgesia in that the risk of subarachnoid infection is eliminated, there is said to be less sympathetic paralysis and therefore circulatory upset, and there is a negligible incidence of neurological complications like headache. Apart from these considerations, the method can be considered similar in its effects and indications to that of spinal anaesthesia.

Secondly, the method is used, in the United States in particular, to provide analgesia during childbirth. The possibility of certain complications like extradural infection, broken needles, or inadvertent subarachnoid injection, and a very high forceps rate from the obstetrics point of view, as well as the need for sufficient personnel to supervise the administration, have together militated against its popularity in this country.

Thirdly, sacral epidural injection of certain long-acting analgesic solutions like "proctocaine" is used to abolish or diminish pain in pelvic carcinomatosis. A less common reason for doing this block is as an alternative to lumbar sympathetic block whether for diagnostic or therapeutic purposes.

Tuberculin Testing in the Presence of Active Disease

Q.—*Are there any grounds for the belief that tuberculin testing may cause a severe exacerbation if active tuberculous disease is present? Should testing be avoided if there is strong suspicion of infection?*

A.—There is no danger in any of the standard methods of tuberculin testing. The dose of tuberculin that is used in skin-testing is only a fraction of the amount that would be required to produce a general reaction. The usual procedure if there is a strong suspicion of infection is to test first with a Mantoux 1 tuberculin unit (1/10,000) and only to use stronger tests when this has proved negative.

Repellents for Wasps and Bees

Q.—*Is there any effective wasp and bee repellent for use by persons hypersensitive to their stings?*

A.—Many attempts have been made to discover repellents that would be effective against wasps and bees, but so far without success. Dimethyl phthalate, which has proved so successful against mosquitoes and other biting flies, is not effective as a bee repellent.

NOTES AND COMMENTS

Aspermia.—Mr. R. H. BOYD (London, W.C.1) writes: In "Any Questions?" (May 2, p. 1005) there is an able summary of the investigation and treatment of a case of azoospermia in answer to a question on aspermia, which is absence of semen and not absence of spermatozoa. This is a common mistake even among experts. Aspermia does occur, but is the finding in under 0.1% of males, whereas azoospermia is found in 7%. Aspermia may be due to absence, or inflammatory obliteration, of the seminal vesicles; to retrograde ejaculation into the bladder; or the non-emission may be the result of sympathectomy for hypertension—potency not being affected; etc. In all probability, however, the question does really refer to azoospermia. Bayle is quoted as an opponent of testicular biopsy on account of blockage of the vasa efferentia by haemorrhage. In a large series of bilateral biopsies on cases of oligozoospermia there has not been one instance of this. And, indeed, biopsy is the most useful accepted method of investigation. It is not needed in cases of bilateral gonococcal epididymitis, where spermatogenesis can be safely assumed. In this group the success rate from epididymovasostomy is indeed high, approaching Bayle's 66%, but in no other cause group can these figures be reached. The operation is worth doing, but the patient must expect little more than a 10% or at most 20% chance of cure.

OUR EXPERT writes: As Mr. Boyd suggests, experts do indeed differ. I certainly would not agree to his definition of aspermia as the absence of semen. For this the term "seminal anorrhoea" or, more simply and better still, "failure of ejaculation" should be used. A distinction is sometimes, though I think not altogether necessarily, drawn between aspermia (implying the total absence of elements derived from the germinal epithelium) and azoospermia (meaning the absence of mature spermatozoa). I have no strong views on the danger of testicular biopsy, but merely quoted the point that Bayle raises. I agree that the likelihood of efferential blockage resulting must be small. I would further point out that Bayle's 66% success rate is in *surgically suitable cases only*, most of which—as Mr. Boyd says—have a gonococcal aetiology. In point of fact, suitability for surgery can be determined only at the time of operation.

Allergy to Condoms.—Mr. L. LANDAU (director, London Rubber Company, Ltd.) writes: I note with interest your answer to a question under the heading "Allergy to Condoms" ("Any Questions?" May 2, p. 1006). I have in the past investigated a considerable number of similar cases, and agree with you that in this particular case we are dealing with sensitivity to rubber. I am, however, of the opinion that this developed sensitivity is not due to any of the chemicals used but to the rubber itself. Chemicals used in the manufacture of rubber protectives—namely, vulcanizing agents, accelerators, antioxidants, stabilizers, and dusting powders—are quite harmless, and I have so far not seen a single case where a patch test carried out with any of these materials resulted in a positive reaction. Occasionally, however, minute traces of alkaline substances, potassium carbonate or triethanolamine, may be left in the rubber and result in irritation. These substances, however, produce an unmistakable soda dermatitis, an effect different from that described by your correspondent.

OUR EXPERT writes: Mr. Landau's experience is completely contrary to my own and, indeed, to all the recorded cases that I know of. The rubber dermatitis that occurred from contact with respirators during the recent war was almost, if not quite invariably, due to the chemical processing of the rubber rather than to the rubber itself. It was regularly remedied by an official arrangement of providing a different type of respirator in such cases. Quite recently a case where rubber sensitivity was due to benzthiazole has been recorded.[1] I think Mr. Landau will also find upon inquiry that dermatitis in rubber workers, as distinct from rubber users, is also due not to rubber but to chemicals used in processing.

REFERENCE

[1] *Proc. R. Soc. Med.*, 1952, 45, 491.

"Any Questions?" Book: Second Series.—This is now available, price 7s. 6d. (postage 6d. extra), from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

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